The United States MILLER

Published by E. HARRISON CAWKER. { Vol. 16, No. 4. } MILWAUKEE, FEBRUARY, 1884. { Terms: $1.00 a Year in Advance. Single Copies, 10 Cents.

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THE YOUTH AND THE MILL STREAM.

[Written by GOETHE while on a visit to Switzerland.]

YOUTH.

Pretty brooklet, gaily glancing
In the morning sun,
Why so joyous in thy dancing?
Whither dost thou run?
What is't lures thee to the vale?
Tell me, if thou hast a tale.

BROOK.

Youth! I was a brooklet lately,
Wandering at my will;
Then I might have moved sedately.
Now, to yonder mill
Must I hurry, swift and strong,
Therefore do I race along.

YOUTH.

Brooklet, happy in thy duty,
Nathless thou art free;
Knowest not the power of beauty
That enchaineth me!
Looks the miller's comely daughter
Ever kindly on thy waters!

BROOK.

Early comes she every morning,
From some blissful dreams;
And, so sweet in her adorning,
Bends above my stream,
Then her bosom, white as snow,
Makes my chilly waters glow.

YOUTH.

If her beauty brings such gladness,
Brooklet unto thee,
Marvel not if I to madness
Should enflamed be.
O that I could hope to move her!
Once to see her is to love her.

BROOK.

Then careering—ah, so proudly!
Rush I o'er the wheel,
And the merry mill speaks loudly
All the joy I feel.
Show me but the miller's daughter,
And more swiftly flows my water.

YOUTH.

Nay, but, brooklet, tell me truly,
Feelest thou no pain,
When she smiles and bids thee duly
Go nor turn again?
Hath that simple smile no cunning,
Brook, to stay thee in thy running?

BROOK.

Hard it is to lose her shadow,
Hard to pass away;
Slowly, sadly, down the meadow
Uninspired I stray.
O, if I might have my will,
Back to her I'd hasten still!

YOUTH.

Brook! my love thou comprehendest;
Fare thee well awhile;
One day, when thou hither wendest
Mayst thou see me smile.
Go, and in thy gentlest fashion,
Tell that maiden all my passion!

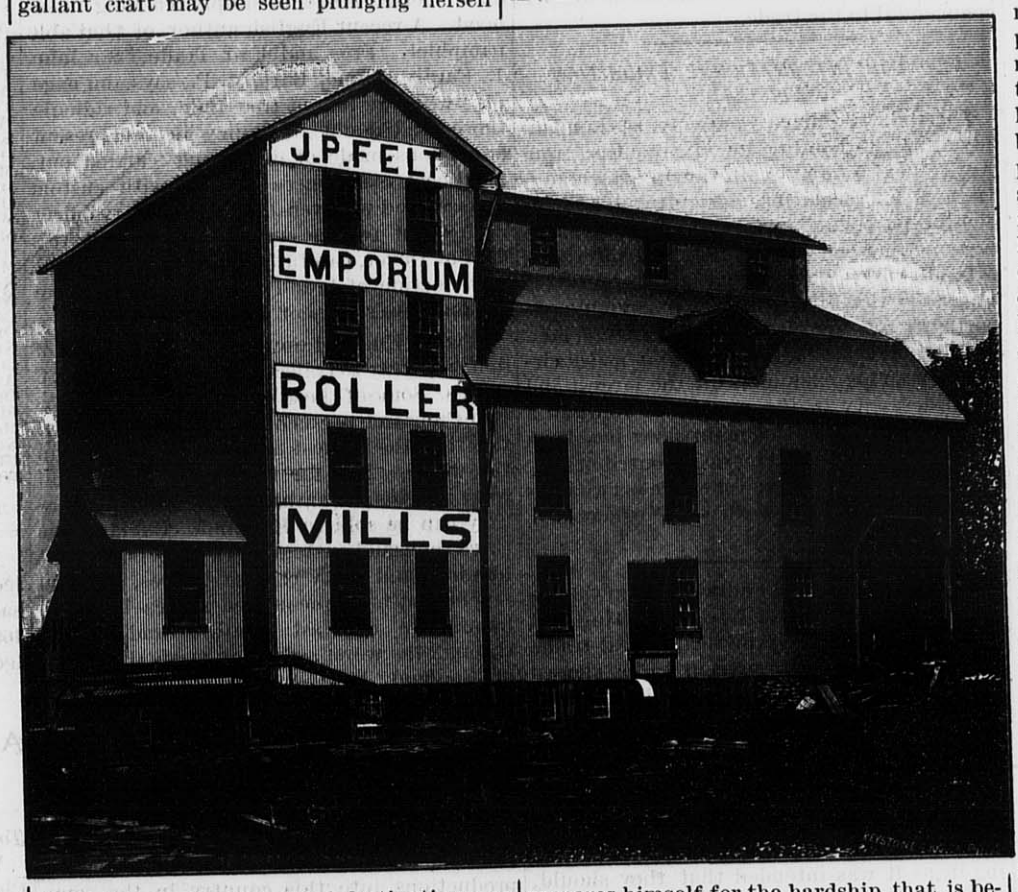
EMPORIUM ROLLER MILLS.

We present you herewith an illustration of a modern roller mill, the property of J. P. Felt, of Emporium, Pa. We give it this prominence in our paper because it has been equipped thoroughly throughout with everything that was necessary to make the mill a success, and the results are so entirely satisfactory that it is worthy of more than an ordinary notice.

Mr. Felt some months ago was the owner of a small mill, and doing a fair business, in a small way, but being wide-awake and desiring to keep abreast of the times, he put in one pair of "Bismarck" rolls, and this so opened his eyes to what rolls would do, that he was induced to go ahead at once and convert his mill to an entire roller mill, enlarging the building at the same time, so as to make it up to the capacity of 150 to 200 barrels.

The first roll he bought was from the Case Manufacturing Co., and it having pleased Mr. Felt, he went to them again when he came to convert his mill over entirely, so that the mill is now provided with a full line of Case machines, consisting of their Three Roller Mill for first and second breaks, followed by their "Bismarck" four roller mills, 9x18 and 9x24 in size, having both break rolls and smooth rolls throughout. The same company having supplied their centrifugal reels, purifiers, scalping reels, etc., throughout and made the programme or flow of material for the mill, which, being faithfully carried out, the mill started up without a day's delay and has been for four months a continued success.

Mr. Felt is worth of praise for the energy he has displayed and for the faith he had in the new system of milling, which has proved to be a blessing to him as well as,we presume, to his customers. The mill is located in a fine wheat section of the State and it is able to grind a first-class quality of wheat, which has much to do in making fine results. Our information is to the effect that the mill is a success in every particular, both as to its mechanical results, as well as to its financial results.



[Written for THE UNITED STATES MILLER.]

THE STORM, OR THE HARDSHIPS OF A SAILOR.

(By CAPT. W. DINGMAN.)

The sun was seen to rise in the eastern horizon, surrounded by a heavy dark-red sky; not a sign of a storm was visible. Our gallant craft may be seen plunging herself onward toward her port of destination; as proud as the eagle that soars high among the mountains, so our noble craft is seen with her great canvas wings, speeding her way over the dark-blue waters, seeming to be in great haste to accomplish the task that is before her; proudly she glides along over the rippling waters; and our jolly sailors may be seen with a smile on their weather-beaten faces, for a stiff and a rattling breeze is what fills the heart of a bold sailor; everything is joyful with him as long as there is a fair wind blowing, and plenty of it. Soon the clouds are seen to be gathering and everything threatening a storm. The watch on deck is eyeing every movement of the clouds; presently the gallant craft comes almost to a standstill. The sails that a few moments before were filled with a rattling fair wind, are all becalmed. The captain comes on deck and views the horizon with the greatest care, watching the moving of the scuds as they are flying around in all directions. Presently there is a little breeze springing up, and the order is given to haul aft the sheets; no sooner is this done than the noble craft is once more beginning to move a little faster on her course, but she seems to be aware of the approaching storm and seems to be in dread of it as much as the poor sailor is, for she appears to know the hardships that lie before her. Presently the order comes from the captain to haul everything aft, and at last our craft that a few hours before was plunging through the waters with a fair wind, is now put by the wind on a close haul. The wind seems to be freshening up more and more, and our noble craft may be seen battling with the gale, with her lee-rail almost even with the water's edge, and the spray flying over her weather-bow, threatening to stave in her bulwarks, unless she is put under easy canvas. The watch below is now called on deck, and the order given to shorten sail; the topgallant sail is settled away and clewed up and bunted up snug; then the main gaff topsail is taken in, and then the mizzen gaff-topsail is stowed; and our bark is now making rattling time, and to the weather side may be seen our bold, hardy sailors smoking their pipes and prophesying of the approaching storm and waiting for the next order. Presently the gale increases, and the order is to take in the jib top-sail and reef the fore and aft canvas; this is done, and the gale still continues, until the water is a complete mass of foaming billows. The good ship is striving hard to gain the victory, with her lee-deck planks under water; she is seen wallowing her way through the foam-crested billows. The rain begins to fall, and the poor sailor starts for the forecastle and clothes himself in a suit of oil skins and a sou'-wester, and prepares himself for the hardship that is before him; on deck once more he is seen prepared for the storm. Not a word is spoken, his watchful eye cast aloft, and he gazes on the dark heavy clouds as they are pouring down their torrents of rain upon him; he then scans the vast body of foaming water that surrounds him. The fury of the gale continues fiercer and fiercer; at length the order comes to put in another reef in her fore and aft canvas; this is done, and then the flying jib is taken in and a stop put on it; she then makes easier work of it and can be handled easier. Trimming a canvas on a vessel in a storm is like a musician tuning his violin for a ball; every note must chord with each other; so it is on board of a vessel; one sail must correspond with the other, or she will either pay off or come up in the wind too much. But to our subject once more; the next dread that is coming on is darkness. Tired, wet and hungry the poor sailor is seen ever faithful standing at his post, thinking that perhaps every hour the storm will begin to abate, but not so. The shades of evening are fast approaching upon him, until at last thick darkness surrounds him; fiercer the gale, heavier the rain beats down upon him, while on shore in good comfortable beds and by warm fires the brave land lubbers are enjoying themselves, thinking not of the poor sailor that is undergoing hardships at sea, that he (the land lubber) could not stand were he forced to; and still we poor sailors are looked upon as dogs. Without the sailor, where would the millionaire importer be? Who would watch over his cargo and land it safely at his wharf? He would sooner have a dog admitted into his mansion, than to have a poor sailor enter his garden walk. But remember we sailors are not murderers and robbers, highwaymen and beats. We are merely human beings like yourselves. Only our lot is nothing but hardships, which the Almighty has placed us here upon this earth to perform for you, for you are not able to undergo one-half the hardships at sea that a sailor-boy can. We are proud of our honorable position and proud to think that we are capable of enduring these tasks set before us. To proceed with our story once more; as I have before stated, the gale is in its fury, thick darkness is upon us, the man at the wheel is relieved and another takes his place; the vessel is beginning to labour heavily in the sea and the pumps are set at work, as a vessel, no matter how staunch she is, is liable to strain herself in some way in a heavy sea. Midnight is upon them, and no sign of the storm abating. The order comes to take in everything and heave her to under the mizzen and stay-sail; this is done and our trembling craft is lying head to wind and making no headway. There she lies and plunges her bows into the angry waves; she rides the storm easy in this way, the main thing now is to keep her free, that is not let her get too much water in her hold. Daylight begins to loom up in the east'ard, the rain has passed over, the wind begins to die down, the seas are not running as high, joy begins to fill the poor weary sailor's heart; at last daylight comes once more. The wind has all died out, and a dead calm is upon them; a heavy dead swell is running. Presently a gentle breeze springs up, the reefs shaken out, and once more the canvas is made, and our noble craft that has so proudly weathered the storm and carried her precious cargo of human lives safely through the storm, is once more on her course, and the brave sailor is once more on his way to his loving wife and family, or his sweetheart, for, as a general thing, a sailor has a sweetheart in most every port he goes to. And a lady that loves a sailor is to be honored, for she loves a brave and gallant hero, one whom she need not fear to cling to for protection, for a lady and a fair wind is the sailor's delight. If a young lady happens to fall in love with a sailor-boy, of course her parents object to her having anything to do with him whatever, for he is nothing but a common sailor, a mere dog. Where will you find a more tender hearted being than a sailor, one who will always risk his own dear life to save the lives of others? Stop and think for an instant; go to the beach when there is a wreck fast going to pieces with many poor souls almost perishing with wet and cold; who is the first to lend a helping hand to rescue those on board? The answer is, a sailor, every time. While upon the beach as far back from the water's edge as he can get, you will see the dude, with one hand on his hat and the other holding a one-eyed glass to his wicked eye, and watch his fellow beings sink beneath the angry deep and never offer to lend a helping hand to save the perishing ones before his eyes. Those are the kind of fellows that are welcomed in family circles, and the door is shut in the brave sailor's face. A sailor is almost a nation of his own, and as in other nations, you will find both good and bad among sailors, but you never will find a coward at sea. If you want a helping hand, call upon a sailor; if you wish to employ a worker, get a sailor; if you want a true and faithful husband for your daughter, get a sailor. But if you want to borrow money, never call on a sailor, for he spends his money as fast as he gets it, to enjoy the pleasure of the world. There is where he makes up his lost time after battling the stormy deep, as heretofore shown. Above all things, honor a sailor, help him when you can, make things enjoyable for him when he is in your company, for some day he may give his own dear life to save yours.

DURING the past month we have received letters from more than fifty mill-builders and furnishers, and they all report prospects good, although business just at this writing is not pressing. Two or three manufacturers predict that there will be more re-modeling of old small mills and building of new mills of moderate capacity, than ever before in one year.

UNITED STATES MILLER.

PUBLISHED MONTHLY.

OFFICE NOS. 116 & 118 GRAND AVENUE, MILWAUKEE.

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MILWAUKEE, FEBRUARY, 1884.

ANNOUNCEMENT:

☞WM. DUNHAM, *Editor of "The Miller," 69 Mark Lane, and* HENRY F. GILLIG & CO., *449 Strand, London, England are authorized to receive subscriptions for the* UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

☞*The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices, where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.*

CAWKER'S AMERICAN FLOUR MILL AND MILL FURNISHERS' DIRECTORY for 1884, published by E. Harrison Cawker, of Milwaukee, Wis., and sold for ($10.00) ten dollars per copy, is now ready for delivery. It shows the result of an immense amount of labor, careful inquiry and studious attention to details. It is without doubt the most accurate trade directory ever published, and will be of untold value to those desiring to reach the milling industry of America.

We glean from this neat volume of 200 pages containing no advertisements, that there are in the United States of America and our neighboring Dominion of Canada 25,050 flouring mills, taking them as they go great and small. The work indicates in about 10,000 instances the kind or kinds of power used by the mills, and the capacity in barrels of flour per day. It further indicates cornmeal, buckwheat, rye-flour and rice mills. It shows that the number of mills in the various states and territories of the United States are as follows: Alabama 153; Arizona 17; Arkansas 343; California 222; Colorado 54; Connecticut 288; Dakota 81; Delaware 98; District of Columbia 5; Florida 66; Georgia 631; Idaho 21; Illinois 1123; Indiana 1089; Indian Territory 14; Iowa 790; Kansas 489; Kentucky 713; Louisiana 61; Maine 280; Maryland 353; Massachusetts 340; Michigan 846; Minnesota 487; Mississippi 386; Missouri 1025; Montana 21; Nebraska 250; Nevada 13; New Hampshire 182; New Jersey 442; New Mexico 32; New York 1902; North Carolina 848; Ohio 1443; Oregon 145; Pennsylvania 3142; Rhode Island 51; South Carolina 274; Tennessee 801; Texas 703; Utah 110; Vermont 247; Virginia 781; Washington Territory 61; West Virginia 447; Wisconsin 777; Wyoming 2.

In the Dominion of Canada we find the record as follows: British Columbia 17; Manitoba 54; New Brunswick 198; Nova Scotia 102; Ontario 1160; Prince Edward's Island 39; Quebec 531. Total 25,050.

Taking the work throughout, and it is highly interesting to all concerned in the trade, and we take pleasure in recommending it to the trade.

IT IS FINISHED.

CAWKER'S AMERICAN FLOUR MILL AND MILL FURNISHERS' DIRECTORY FOR

—1884—

is this day, January 31st, completed and ready for delivery.

It contains 25,050 addresses.

It indicates in thousands of cases the capacity and power used.

It is the best trade directory ever published.

Its price to everybody is Ten Dollars per copy, without discount. Sent by mail anywhere.

All agreements made with Millers who aided us while preparing this work will be scrupulously fulfilled.

Address all communications to

E. HARRISON CAWKER,
Publisher.
116 and 118 Grand Avenue,
MILWAUKEE, WIS.

WE have received a copy of the 1884 catalogue of the Edward Harrison Mill Co., illustrating the well-known Harrison Grinding Mills.

"*Grain*," the poetical milling paper of Indianopolis, Ind., comes to hand this month with a very tasty cover of peculiar design and is otherwise much improved in appearance.

WE will furnish a copy of Ropp's Commercial Calculator, in plain binding, and a copy of the UNITED STATES MILLER for one year for One Dollar, to all parties sending in their order provious to April 1st, 1884.

WE trust our numerous readers will be well pleased with our new dress of type on this issue. It shall be our earnest endeavor to make the UNITED STATES MILLER in all respects worthy of the highest esteem of our readers.

WE call the attention of grain and seed men to the advertisement on another page of the dustless separator manufactured by Messrs. Johnson & Field, of Racine, Wis. The machine is simple in its construction and operations, and is spoken of in the very highest terms by those using it. Millers, warehouse men and grain-dealers will do well to examine the merits of this machine.

WE beg leave to call the attention of our readers to the INTERNATIONAL TELEGRAPHIC CABLE CODE, specially arranged for correspondents between Europe and America. It is published by the RIVERSIDE PRINTING COMPANY of Milwaukee, Wis., and is sold for $2.00 per copy. A great amount of time and labor has been expended in the preparation of the work. Millers, Flour Brokers, Commission Merchants, and others who have examined the work, pronounce it the best of the kind ever published, and many orders from large firms have already been booked. We commend it to the trade.

A LONDON INTERNATIONAL EXHIBITION FOR 1884.

The Crystal Palace Company, of London, advertise the holding for six months, from April 3 next, of an "exhibition of arts, manufactures, and scientific, agricultural, and industrial products," and invite the participation of American exhibitors. The enterprise is in no way a government affair, but it is suggested that it will afford a valuable opportunity for American manufacturers, etc., to bring their production before a wider circle of possible customers in the largest and wealthiest city in the world. A court in a central position on the main floor has been set aside for expected American contributions, and the ordinary charge for space is two shillings per square foot, with some exceptions, both higher and lower.

MUCH has been said and written on the Indian wheat question of late, predicting that India would kill the American wheat trade, but we prefer for the present to be classed among the "Doubting Thomases." It is true that, during the past year, India has exported a goodly quantity of wheat, but it is not so long ago that wheat was sent from America and England to keep the inhabitants of those countries from starving to death. It is possible that the rascals planted it instead of eating it, as it was intended that they should, and are now exporting their surplus product. It is just possible that we should have sent it "biled," as Gen. Grant is said to have done with his father's fancy chickens' eggs. He sold a dozen, so the story goes, to a neighbor for a dollar, and his father found it out. "Ulyss," says he, "did you sell Mr. B— a dozen eggs from my fancy chickens?" "Why, yes, pap, and got a dollar for 'em," replied Ulysses. "How dare you do such a thing, you young vagabond," said his father. "You knew I wouldn't have him get that breed for a hundred dollars?" "O, well, that's O. K." replied the boy, "I *biled* 'em before I sold 'em. "Ah, you did, eh?" chuckled the old gentleman, "you're a smart boy, and no doubt will make a great man. Just give me the dollar, Ulyss, and I'll keep it for you." And the youngster sorrowfully gave it up.

HAS ENGLAND FREE TRADE?

[Written for the UNITED STATES MILLER,]

BY JOHN W. HINTON.

Thousands upon thousands of American youths are taught to believe that England has free trade. Professors of free trade colleges and universities, instil the falsehood into the minds of those entrusted to them for tuition; asserting that England's greatness is wholly due to her free trade. An old adage says, a lie laminated in rhetoric will have more effect than the truth uttered in plain English, and another it may be well to remember. The truth may be attacked with impunity, while a sophism can only be drawn from out the heart with a violence that lacerates. A gentleman informed me of an incident that occurred in Liverpool, England, last year. A student of an American college, but a short time graduated, was directed to open his trunks by an English Custom House officer. He at first refused, when a couple of thousand cigars and some new silk handkerchiefs, etc., were appraised for duty before he could be permitted to take them ashore in free trade England. The student at once realized the false teachings of his "dearly beloved Alma Mater." He had believed that England was really free trade. But when his cigars, handkerchiefs, perfumery, etc., were appraised for duty which he had to pay, or lose the articles, his eyes were for the first time opened to the false tuition of his college professor.

He had implicitly believed what was told him at college. Like the Irishman in the naval engagement carrying the wounded below, while bearing a sailor to the cockpit on his shoulders, a cannon ball cut off the head of the sailor. Pat put him on the surgeon's table. "What did you bring this man here for?" exclaimed the doctor, "his head's off." Pat was thunderstruck. "Is it his head indeed? Be jabers, and he towld me t'was his leg whin I picked him up." The American student's remonstrances against the custom house officers in England, stating his professor's teachings that England was free trade, thereby hoping to retain his articles, had as much effect on the officers as the Irishman's assertion, that the headless man had told him, "it was only his leg, whin he picked him up," had on the surgeon. Oscar Wilde in his lecture on America, said, that many people in the United States called him "Captain," "Major," "Colonel," which he didn't mind, but, said he, "when they called me Professor, I felt I was insulted." Oscar Wilde was not such a fool as many thought; he had discerning powers, and used them; moreover he was dignified and had self-respect.

To teach youths in this country that England has free trade, is simply teaching falsehood. A recent English author, of that able pamphlet, "Free and Fair Trade," Sir John E. Eardly Wilmot Bart, M. P., says, (on page 15), "while we talk of free trade, and ridicule those who doubt its policy in the present anomalous mode of its being carried out, our coast everywhere bristles with custom houses, and we even find the solitary officer in his hut on the summit of Shakspeare's Cliff at Dover, carefully guarding against the introduction of brandy or cigars, etc., from the opposite shores of France."

It costs England upwards of *six millions* of dollars a year to collect her customs or tariff duties. Some of those duties range as high as two thousand per cent. England having at this time the highest tariff of any country in the world. Not far from one hundred and forty articles bear a high import duty before they can be sold in England. England has three thousand custom house officers, and one hundred and forty custom houses. Several revenue cutters, unequalled as sea boats, to breast the heaviest weather and plough through the worst seas that wash the coasts of England, Ireland, Scotland and Wales. Her coast guard service is the finest the world ever saw, and is a nursery for the bravest, most dashing and daring sailors ever known. England collected upwards of five millions of dollars more tariff revenue on the importation of American products into England in 1881 than the United States collected on English productions into this country in the same year.

The English tariff on foreign productions—the higher the degree of manufacture, the higher the tariff—amounts to about one hundred millions of dollars a year. Her system of differential tariff increasing the tariff as the manufacture of the import is advanced, is the shrewdest form of tariff ever devised. The "nation of shopkeepers," as Bunaparte called the English people, always try to take care of their own interest; but their so-called free trade system is now being tried as it was never before tested. No better proof is to be found than the strenuous, desperate efforts England is now making to destroy our industries, upon the ruins of which they would build up their own. Trade, trade, trade! is the Deity most worshipped in England. One of her newspapers touches up the religious aspect of her life thus:

"The missionary has lately entered in such close partnership with the trader, that the people of the countries they wish to "open up," must be in doubt whether it is our Bible or broadcloth, our cotton or our Christianity that we most desire to force upon them, and the attempt to compel them to accept a spurious Christianity and shoddy manufactures by means of bayonets and cannon is not likely to be permanently successful."

Failing to force her "broadcloth" and other manufactures upon us "by means of bayonets and cannon," she has resorted to diplomacy, by her ambassadors, that class described by old Dr. Johnson:

"Ambassadors are men sent abroad to tell lies for the benefit of their country."

The danger most to be feared in the United States, is, that foreign ambassadors, when "lying for the benefit of England," receive so much aid from American free traders.

YIELD OF CEREALS IN 1883.

The last report of the United States Agricultural Department, which has just been issued, gives in detail for each state the production of wheat, corn and oats in 1883.

The area devoted to corn was by far the largest on record, the total for the country being 68,301,889 acres, on which the average yield was 22.7 bushels per acre, giving a total crop of 1,551,066,835 bushels of corn. This estimate as to the total yield of corn is considerably higher than the figures put forth by many good crop authorities, and are admittedly higher than the yield of good merchantable corn, but they are given by the department as covering the entire crop regardless of tne quality of the grain. Much of this corn was badly damaged before being gathered, but that will be used for early feeding and go a long way to help out the total supply.

Of wheat the acreage for the country was 36,393,319 acres, and the total production 420,154,500, being an average yield of 11.5 bushels per acre. The oat crop was the largest ever gathered, the yield being 571,233,400 bushels, on 20,322,622 acres, or 28.1 bushels per acre. The yield of wheat and corn by states for 1883 was as follows:

States.	Corn, bus.	Wheat, bus.
Maine	1,062,800	614,300
New Hampshire	1,368,500	181,700
Vermont	1,817,300	353,700
Massachusetts	2,039,100	19,700
Rhode Island	414,300	.....
Connecticut	1,710,000	34,300
New York	17,512,700	8,035,200
New Jersey	9,715,100	2,063,600
Pennsylvania	37,857,400	20,043,800
Delaware	3,822,200	906,700
Maryland	16,251,200	7,577,000
Virginia	26,868,700	8,352,800
North Carolina	28,692,200	4,235,800
South Carolina	11,107,800	1,139,200
Georgia	24,615,900	2,574,900
Florida	3,399,200	.....
Alabama	26,189,300	1,437,500
Mississippi	25,257,100	247,500
Louisiana	13,130,600	.....
Texas	63,146,300	4,301,000
Arkansas	30,456,500	1,416,400
Tennessee	64,259,000	7,408,800
West Virginia	14,294,000	4,257,000
Kentucky	78,201,800	9,612,600
Ohio	73,560,000	25,884,000
Michigan	21,412,300	25,011,000
Indiana	95,620,000	28,447,800
Illinois	203,786,500	22,150,000
Wisconsin	23,579,300	19,604,960
Minnesota	15,124,800	33,773,200
Iowa	169,629,000	27,518,800
Missouri	161,655,000	23,819,300
Kansas	172,800,900	26,851,100
Nebraska	101,278,900	27,481,300
California	2,464,800	26,322,000
Oregon	129,300	13,122,400
Nevada	21,100	99,200
Colorado	532,100	2,394,000
Arizona	54,700	.....
Dakota	4,915,055	16,128,000
Idaho	32,500	.....
Montana	10,040	942,000
New Mexico	930,100	977,900
Utah	280,100	1,579,400
Washington	61,400	3,182,700
Total	1,551,066,835	420,154,500

In the production of corn of 1883 Illinois led with 203,786,500 bushels, followed by Kansas, with 172,800,904 bushels, and Iowa with 169,629,000 bushels, while in wheat Minnesota led with 33,773,200 bushels.

[COMMUNICATION.]

A REVOLUTION IN WHEAT CLEANING.

To the Milling Trade:—

We wish to call your attention to our Wheat Cleaning Machine, working on a new principle. After a great many practical experiments, we have succeeded in perfecting what is pronounced by all the millers and mill builders who have examined it the most perfect Wheat Cleaning Machine yet offered to the public. Although it has been open to inspection but a few weeks, scores of millers and machine men have been to examine it and a number of mills and elevators are already putting them in. The work is done by a *Direct Beating or Percussive Action*, instead of by friction as in the old method. Friction machines depend for their efficiency upon packing the wheat closely in a confined space and rubbing it violently against the confining walls. In our method, the kernels are separated and beaten back and forth with thousands of blows by a series of beaters mounted upon revolving shafts. Working in this way very little power is required for an immense capacity and an astonishing amount of cleaning. We guarantee to remove more of the fine fluffy material on the outside of the berry at one operation than can be done with any brush or scouring machine at three or four, at the same time using but one-third or one-fourth of the power required by one of those machines. *Three-horse power will clean 150 bushels per hour.* The inner bran as seen under the glass is left in beautiful milling condition while the brush on the end of the kernel is removed and the crease thoroughly cleaned out. The machine is particularly suitable for elevators on account of the minimum of power used, and the ease with which it *removes smut* and puts in milling condition wheat that could not otherwise be sent to a mill. Please write for further information and prices.

F. E. CURTIS.
W. H. HELFRICH.
Windom Block, Minneapolis, Minn.

A NEW PULLEY.

He is a daring man who in these days writes "New" upon any invention. Still in heading this article we do so advisedly. Not that the Fulton Steel Pulley is wholly and entirely a "new thing under the sun." But its leading features are so novel, and its probable results so far-reaching, that it is quite fair to apply to it this oft-misused adjective.

Let no wise man say, the moment he glances at the cuts on this page, "O, I know a pulley just like that, made long ago." Because he will be greatly mistaken. And this is not pleasant, you know.

The patentees, Messrs. Harmon H. Fulton and Christoph Olsen, both of the Indianapolis Machine and Bolt Co., have been fortunate enough to give to the world a pulley that combines strength, lightness and cheapness to a degree hitherto unattained in the field of the transmission of power. And as the manufacture of these pulleys has begun, and will soon be carried on at three different points in the United States, we think it an opportune time to give the readers of THE UNITED STATES MILLER an illustrated description of the invention.

Reference to figure 1 will give the reader an excellent idea of the appearance of the pulley. It will be seen to consist of three parts—the rim, the centre and the hub. The rim and centre are of steel, while the hub is malleable iron.

One great feature of the Fulton Pulley lies in the corrugations of the steel centre, or disc. Every machinist will at once recognize the immense additional strength imparted to the pulley by these corrugations. They may be laid on concentrically, as in the cut, or radially, to meet the wishes of users.

The corrugating of these discs is done by a powerful press, made especially for the purpose after long and expensive experimenting. The sheet of hot steel is placed in the press and the die brought down with great force, not only corrugating the disc, but punching out every alternate "ear," by which the rim is afterward to be made fast. The withdrawal of the die pulls up the other alternate ears, thus by one operation leaving the centre fully corrugated, and the ears bent alternately to one side and the other, ready for finishing.

The rim, as before stated, is of steel. This rim is drawn around the center disc while cold by powerful machinery, and there riveted to the ears. The place of meeting of the two ends of the rim is a double joint, and as strong as any other point in the periphery of the pulley.

The hub is cast in two halves, one for each side of the wheel; the face of each half being cast with a corrugation to fit snugly to that of the steel disc. The two halves of the hub are placed in position and bolted firmly together through the disc.

A sectional view of the pulley is shown at fig. 2, and fully illustrates the method of joining the various parts. This cut also shows the form of the corrugations on the steel disc, with the alternate ears on either side riveted to the rim. The rivet holes are punched and the riveting completed while the pulley is in the chuck, so that when it is released the pulley is made.

Fig. 2 also shows the hub with its corrugations closely hugging the disc, held there by the bolts.

A split pulley is also made under the Fulton patents, which is so cheaply done as to bring the price down nearly to that of the ordinary pulley; in other words, almost 50 per cent. cheaper than the ordinary iron split pulley.

The Fulton pulley can be made up to five feet in diameter. In the larger sizes a double disc is used to give additional strength and stiffness.

Let us briefly note the advantages claimed for this invention. And in doing so we can say that we are personally cognizant of the truth of the claims as set forth.

First. It is lighter than any other metal pulley now in use, having only about half the weight of the lightest of these.

Second. It is fully as strong in doing its work, and absolutely free from any danger of breakage.

Third. It is perfectly balanced from the moment the rim is drawn into position.

Fourth. The lightness of the pulley admits of a far lighter hanger, thus decreasing cost in this way.

Fifth. The friction is greatly reduced, enabling a lighter shaft to do the same amount of work.

Sixth. A great saving of labor is effected by using the Fulton Pulley, when placing it in position, because of its extreme lightness.

The Fulton Pulley may also be made either crowning or flat, and to run vertically or horizontally, as occasion may require.

One of these pulleys has been subjected to a severe test with such satisfactory results that we give it here. The pulley was 30x12, and was put on the main shaft in the Indianapolis Machine and Bolt Works, in place of a 28x8 pulley. The belt was not even let out to allow for this difference in size, but was forcibly stretched on just as it was. So great was the strain that one side of the lacing burst, and it took the combined strength of five men to put the belt on. Yet the pulley sustained the strain with no sign of giving. It was at once put to work, and drove two large Sturtevant fans, two bolt cutters and a couple of tappers, with perfect ease.

It may be well, in closing this sketch, to call the reader's attention to the fact that the Fulton Pulley is plastered thick with patents. Indeed, it would surprise many to know how thoroughly the work of the patent lawyers has been done in this case.

Experiments of the most searching kind are now in progress, to test the strength and efficiency of the Fulton Pulley, to the utmost. These experiments are being conducted by some of the most eminent authorities in mechanical science whom our country boasts. Thus far the results of these tests have been most gratifying. A full account of the experiments will be prepared for publication so soon as they shall have been completed.

The Fulton Pulley will be manufactured by three well known firms in the United States: The Indianapolis Machine and Bolt Works, Indianapolis, Ind.; The John T. Noye Manufacturing Co., Buffalo, and the Falls Rivet Co., of Cuyahoga Falls, Ohio. The standing of these establishments is a guarantee of the excellence of the work on the new pulley, while the extensive preparations making by all three indicate their perfect faith in the success of the Fulton Steel Pulley.

A NEBRASKA FLOUR MILL.

[From the PIERCE CO. CALL.]

During the summer one of the most important improvements has been going on in our midst, that Pierce has ever witnessed, without noise, and almost without comment. We have reference to the Pierce Mill, and we have had our time taken up so much with other matters that we have been unable to give a detailed description af this important factor in the future prosperity of our town and county; but at the first opportunity we availed ourselves of the privilege of going through the mill.

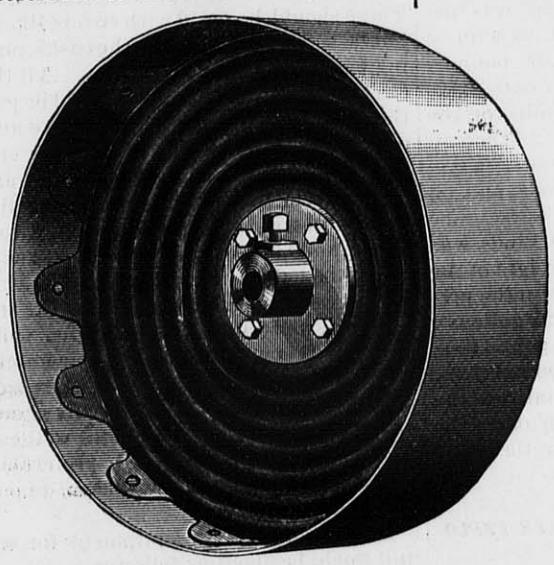

Fig. 1.

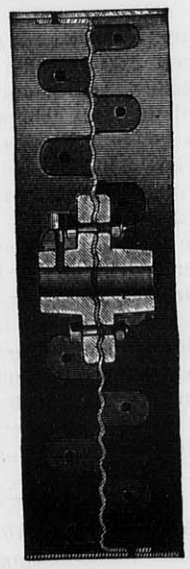

Fig. 2

In the basement, or ground floor, are situated the feet of the twenty-nine elevators, the conveyer for receiving grain from wagons and the cars, also a large sized California brush machine for cleaning wheat, and here, near the elevator, is situated a large Triumph corn sheller, capable of shelling 2,000 bushels of corn per day. Here are also located the line shaft, for driving buhrs and rollers.

On the next floor which is called the grinding floor, there are located thirteen sets of Gray's latest patented rolls, manufactured by E. P. Allis & Co., Milwaukee, also three run of French buhrs for reducing middlings. We also find here two Eureka flour packers for packing different grades of flour, and the rapidity with which they fill a sack with flour is a caution. Here is also another wheat cleaning machine, manufactured by Kirk & Fender, of Minneapolis.

On the third floor, the reels are situated, eighteen in all, made by Allis & Co.; also two double Smith and one largest sized Gray purifiers with dust-catcher attached, and one of Kurth's cockle separators. The flour bins are also located on this floor, which are capable of holding five hundred barrels of flour, also bins for holding bran and shorts, which will hold four carloads.

On the fourth floor are situated the corn meal and rye chests, bolting chests, and one largest size Barnard & Lea's receiving separator, with a capacity of one hundred and fifty bushels per hour. Here we also find another wheat cleaning machine, and one of Gray's centrifugal reels, and one Richmond's bran duster. This is as high as we can get so we will have to return amid the whirling and buzzing machinery to terra firma.

The mill has a capacity of two hundred barrels of flour a day, and their facilities are such that they can unload if necessary ten carloads of wheat per day. The motive power of the mill is one 56-inch special Leffel turbine water wheel, under twelve feet head of water; they appear to have enough power here to run another mill of the same size.

On the south end of the mill are four bins, capable of holding three thousand bushels of grain each, which are already full of wheat, and wheat has been stored in every available place about the premises, and Swaney's elevator in town is also filled up with wheat belonging to the company. If we are not mistaken, we heard some one say, before the mill was started, that they would not get enough grain to keep the mill running half the time, but time has proved that there is more wheat in the country than they can store away. Still they expect to buy all that comes along. They receive grain not only from the farmers of Pierce county but from surrounding counties, even getting trade from farmers living near the town of Stanton, all of whom seem to be well satisfied with the treatment they receive.

Mr. D. T. Gilman, who is secretary and treasurer of the company, has charge of the business of the company here, and Mr. C. E. Hutton, formerly of the Dakota Mills, Elk Point, Dakota, is head miller, and he evidently understands his business. The company at present employ ten men, and keep a traveling salesman (Mr. J. Gates,) continually on the road.

At the west side of the mill is a large building for loading and unloading, which covers a 40-ton Fairbanks' scales, on which is the side track, which the railroad company have built from their main line, for the accommodation of the mill company.

Outside of the mill the company have erected a cattle shed 150 feet long, and capable of holding 100 head of cattle; they have a large wind-mill here, and a tank for holding water for the cattle. To the west of the mill is the office, which is large and commodious; at the office they have a large pair of Fairbanks' scales for weighing wagons, back of which is a private stable belonging to Mr. Gilman where he keeps his horses; west of that is a two-story dwelling house, intended for the head miller's family, but Mr. D. T. Gilman expects to occupy it for a time as soon as his family arrives. Jerry Leavitt has his blacksmith shop near the mill, and attends to all their wants in his line.

The builder of the mill was Mr. G. C. Brannigan of Davenport, Iowa, a contractor of many years' experience, and his work here has certainly been done in a manner highly creditable to himself. Mr. Shorey, another gentleman of large and vast experience was the able assistant of Mr. Brannigan.

Mr. J. H. Lamb, succeeded by Mr. O. H. Carleton, was the able engineer and overseer of Allis & Co.'s work of putting in the large and varied styles of machinery used in this structure.

We are reliably informed that the cost of the mill up to the present time, has been $50,000.

It will be seen from the description of the mill which we have given, that its benefits to the town and county cannot be estimated. It will, undoubtedly, bring considerable trade to our town, which it will be the fault of our tradesmen if they do not keep. And there is no doubt in our minds that the mill company will be able to successfully compete with the celebrated Minneapolis and Kansas mills, whose flour has so justly had a world-wide reputation, for the reason that they have the same machinery, and in fact they have several very important additions, such as later patented processes of making good flour, which patents have come out since the machinery was put in the Kansas and Minneapolis mills—all the latest improvements in milling up to the present time; Therefore we do not see any good reason why the Pierce Mill Company cannot turn out a better grade of flour than this country has yet seen or heard tell of.

[Prepared for the UNITED STATES MILLER.]

REVIEW OF THE MARKET.

The flour market has shown no new developments during the past month, but has ruled excedingly dull with prices easy and in buyer's favor, local jobbers being the prinpal purchasers. A few export buyers are in the market, but their views are so much below the views of sellers that holders, although anxious to realize, are not disposed to meet them, the concessions asked being too large rendering it almost impossible to do anything in the way of filling European orders. Foreign markets, however, are now showing some symptoms of an improvement, which, should it prove permanent, will no doubt bring to us a better trade in the near future.

Local jobbers have been doing a hand to mouth business, buying sparingly, whilst orders from Europe are mostly for *higher* grades, and Canadian orders chiefly for the lower grades.

The stocks of flour on hand are quite large, the stocks of really desirable grades, that is, flour having *strength*, is not so large, such grades being more sought after for home consumption. We quote: Export flour, in 140 lb. burlap sacks, at $3.00 @ $3.50 for low grades, and $3.50, (@ $4.00 for medium to choice spring wheat flours, and $3.50 @ $4.50 for fair to fine winter wheat flours. Rye flour is quoted at from $3.00 to $3.25 per barrel, and Western buckwheat flour at from $5.50 to $5.75. Millstuffs have ruled firm throughout the month, receipts having been small and the demand good. Sacked bran is quoted at from $15.00 to $16.50 per ton, sacks included. Millers generally are restricting their operations to the local wants of the trade.

Below we give the weekly exports from the Atlantic ports for the first four weeks of January 1884. For the weeks ending as follows:

	Flour, bbl.	*Wheat, bush.*	*Corn, bush.*
Jan. 5	128,119	662,948	309,851
Jan. 12	235,859	538,737	232,144
Jan. 19	123,163	1,071,698	519,819
Jan. 26	57,661	946,113	544,318
Total	544,802	2,219,496	1,606,132

The Chief of the Bureau of Statistics furnishes the following reports of exports of breadstuffs during the month of December, 1883, and for the past twelve months, as compared with corresponding period in 1882:

ARTICLES.	Dec. '83.	Jan. 1, '83 to Dec.31'83	Dec. '82.	Jan. 1, '82 to Dec. 31,'82
Flour, bbls.	897,185	8,997,151	1,034,875	7,422,934
Wheat, bush.	5,231,657	69,476,783	8,147,417	108,492,804
Corn, bush.	,705,609	60,539,954	2,331,718	15,389,658
Oats, bush.	29,163	452,282	15,964	282,446
Rye, bush.	425,015	4,690,293	155,789	1,420,460
Barley, bush.	32,380	419,508	12,362	306,396
Corn Meal, bu.	23,466	276,304	24,792	238,544

EXPORTS OF FLOUR, WHEAT AND CORN.

The following table exhibits the exports of flour, wheat and and corn from the United States and Canada from Sept. 1, 1883, to Jan. 4, 1884:

TO GREAT BRITAIN AND IRELAND.

	Flour, bbls.	*Wheat, bush.*	*Corn, bush.*
Totals from Sept 1,' 82 to Jan. 4, 1884	2,230,942	18,518,478	10,719,953
Corresponding time '83	2,112,329	27,743,321	3,341,681

TO THE CONTINENT.

	Flour, bbls.	*Wheat, bush.*	*Corn, bush.*
Totals from Sept. 1, 1883 to Jan. 4, 1884	125,705	6,388,363	3,676,014
Corresponding time '82,	198,210	15,484,859	325,708

TO SOUTH AMERICA, WEST INDIES AND OTHER COUNTRIES.

	Flour, bbls.	*Wheat, bush.*	*Corn. bush.*
Totals from Sept. 1, 1882 to Jan. 4, 1884	854,657	31,789	605,775
Corresponding time '83,	969,725	591,700	349,149

RECAPITULATIVE SUMMARY.

	Flour, bbls.	*Wheat, bush.*	*Corn, bush.*
To Great Britain and Ireland	2,230,942	18,518,478	10,719,053
To the Continent	125,705	6,388,363	3,676,014
S. A., W. I. and other countries	854,657	31,789	605,775
Totals from Sept. 1, 1883 to Jan. 4, 1884	8,211,304	24'938,630	15'001,748
Corresponding time '82,	3,280,264	43,819,880	4,016,532

The above figures deserve attention as showing the vast increase in shipments of flour and the large decrease in shipments of wheat during the year 1883, as compared with that of 1882, the increase in shipments of flour during last year exceeding that of tbe year previous by 1,574,220 bbls., and the decrease in wheat shipments being 38,916,021.

ROLLS for different uses require different amounts of power. The first break may be said to require less than any of the other break machines; at least that is my experience. The power required increases toward the end of the breaks, the sixth requiring the most. Its proportion is often increased because it has more grinding to do than belongs to it, the grinding surface being the same as for the first reduction, which is not right. As to the smooth rolls, the sizing rolls require less power than the others, the middlings rolls somewhat more, and a gradual increase toward the tail of the mill, and as there has never been, so far as I know, any estimates of the power, thus used under various circumstances in the practical uperation of a mill, it would be difficult to estimate closely just what would be required for this part.—*Rough Notes in N. W. Miller.*

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

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MILWAUKEE, FEBRUARY, 1884.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

GREECE imported 6,500 barrels of flour during the year 1882. The imports for 1883 are said to be much larger.

ENGLISH and French millers are thoroughly aroused to the necessity of making more and better flour, and are giving their milling engineers a regular "boom."

THE February installment of our article on "Rye and Rye Milling," commenced in our Jauuary number, is unavoidably omitted from this. It will appear in our March number.

C. K. REIFENIDER, late of the *Age of Steel*, has purchased Mr. Thomas' interest in the *St. Louis Miller*, and he and Mr. Stone will hereafter run the paper. Mr. Thomas will temporarily withdraw from the field of milling journalism.

CAPT. WILLIAM DINGMAN, of Ahnapee, Wis., one of the best navigators on the lakes, (we *know* whereof we speak) will contribute a few articles to the UNITED STATES MILLER during the coming months. The Captain is a ready writer and an accomplished gentleman.

The Millstone has struck it solid in the matter of color for its cover. It has all the tints of the golden corn. It is certainly striking in appearance whether Palmer would call it æsthetic or not, and we don't suppose that Bro. Ranck cares a fig as long as the golden shekels come in lively.

BRO. D. G. TEPPER, of the *Miller's Journal* of New York, was in the city recently and called upon us, but we were unfortunately out of the city at the time. Mr. Tepper now owns an interest in the *Journal* and is working hard to make it what it never yet has been, a *perfect* success.

WE have information that comes from reliable authority that the roller-mill patents of Andreas Mechwart, of Budapest, Austria, Hungary, will become an "object of interest" to millers at no distant day. So far as we have heard, no particular threats have been made against our millers for infringements, but certain steps are being taken to place Mechwart's mills in a favorable light before our milling public.

WE have the pleasure to announce that we have secured the services of a well educated and practical mechanic for the purpose of writing a series of articles for the UNITED STATES MILLER. Like most thorough mechanics, he is extremely modest and it is doubtful if he will write over his own name. We expect to publish his first contribution in March. One thing we can assure our readers, and that is that he will not tell you anything that he don't know.

WE have received from the publishers, Houghton, Mifflin & Co. of Boston, Mass., the fourth and last section of *Knights' New American Mechanical Dictionary*. Price complete $8.00. This work is valuable as a book of reference to everybody desiring information concerning almost any machine or process you can think of. There are doubtless many things left out that it would have been well to have had in the book, but it is quite complete, and so far as we know furnishes more mechanical information than any other one book in existence.

STONE—The invincible, irrepressible, indefatigable, audacious STONE, the publisher of the *St. Louis Miller*, the slaughterer of advertisers, the hail-fellow-well-met of all brother journalists and the enthusiastic admirer of the green fields of mint-juleps and of the fair lilies of the valley, and the roses that walk—bloom we mean, on the verdant hill-tops—Stone, who takes so much pleasure in raking in a neat half-page ad. (at bottom prices to the advertiser,) called on us during the month. He only stayed a pair of hours, and we are glad he did not stay longer, for if he had his jolly good humor would have "busted" off every collar button in Milwaukee. But never mind—welcome Stone and come again, and we will "do you proud" if it busts every button in town!

THE *Millwright and Engineer* published by Edw. P. Allis & Co., of this city, and edited by Albert Hoppin, Esq., formerly editor of the chief milling journal in the White Bear latitudes, now so well known in Hennepin County as *The N. W. Miller*, has made its appearance, and the infant appears to be healthy, taking undoubtedly after its parents, the publishers, and it is tenderly looked after by its god-father Hoppin. The *Millwright and Engineer* has undoubtedly come with the boys to stay and not remain at the bottom either. If it can't get to the top it will certainly get well up on the ladder of journalistic fame and squat securely on a substantial round. Welcome to the youngster and may his quills grow strong and inspiriting.

S. H. SEAMANS, Esq., of Milwaukee, so well known in all milling circles met with a serious, but we are happy to say not dangerous accident during the month just past. He was riding in his cutter in Waukesha Co., not far from Delafield, when the horse became fractious and in some manner Mr. S. got his leg caught between the rail and body of the sleigh and broke one of the bones, half way between the knee and ankle of his right leg. He managed however to hold the horse, secure his seat in the sleigh and drive four miles to his Oconomowoc home. He has been out most every day since and attended personally to business. For pure grit, commend us to Secretary Seamans. He is at all times ready to receive his milling friends.

CROP RESULTS IN BAVARIA FOR THE YEAR 1882.—The average result of corn was per hectare (2.46 acres): On wheat, 2,890 pounds; on spelt, 2.920 pounds; on rye, 2,690 pounds; on barley, 2,930 pounds; and on oats, 2,720 pounds in 1882. The average result for the years 1871 to 1881 was, per hectare (2.46 acres); On wheat,2,610; on spelt, 2,570 pounds; on rye, 2,350 pounds; on barley, 2,600 pounds; and on oats, 2,410 pounds.

The production of straw of all kinds was higher than in the year 1881. The weight of the corn in total average was less than in the previous year, viz: per hectoliter (25 gallons): On wheat, 6 pounds less; on spelt, 1 pound less; on rye, 6 pounds less; on barley, 5 pounds less; and on oats, 2 pounds less. The quality of the grain reached the average only in oats; the remainder was considerably below the average.

ANOTHER POSSIBLE CAUSE OF BOILER EXPLOSIONS.

M. Vignes, in the *Journal la France*, draws attention to experiments made as long ago as 1846, by Professor Donny, of Ghent, and intended to show the influence which air exercises on the boiling-point of water and on the character of its ebullition. In this experiment, ordinary water is placed in a clean glass tube, open at one end, and boiled long enough to drive away not only the air above the surface of the water, but all the air dissolved in the water. Then, when the upper part of the tube is full of pure steam, the mouth is hermetically sealed and the tube is left to cool. When cool, it is about half full of water, above which is vapor of water at a very low pressure. The tube being thus prepared, its lower end is plunged into a bath of glycerine or oil, which is gradually heated. No ebullition is visible in the tube when the temperature reaches 234 degrees Fahr. At 240 degrees Fahr., however, the column of water bursts, as it were, in two, with a sudden explosion, and part of it is flung against the sealed end with such force as often to break it open. Now, in industrial works, it often happens that a boiler having been filled with water works three or four hours without receiving a further supply. It may then be cooled down, and the next time it is wanted it may very probably be fired up again without starting the feed-pump, the water level being judged sufficiently high; but the water in such a boiler will be in the same condition as that in the test-tube; that is, it will be deprived of all air, and consist of water below and vapor above, the latter, however, being probably at a much higher pressure than that of the water in the tube. This water has no free surfaces in its interior due to the presence of bubbles of air, from which evaporation can take place. Consequently, as in the test-tube, there will be delay in vaporizing—at least until the expansion becomes great enough to overcome the pressure of the superincumbent vapor, and a sudden flashing into steam, which will be of the nature of an explosion, and may easily overcome the resistance of the boiler. The pressure thus attained may be very great. In the test-tube the temperature of explosion—240 degrees Fahr.—will be eighty-six times what may be taken as the pressure of the superincumbent vapor in the boiler, as already observed. That pressure will probably be much higher and the pressure of the explosion will probably be much higher also. To avoid this source of danger, it will be sufficient, as M. Vignes points out, to make it a rule always to feed a boiler when it is fired after standing. This will have the double effect of lowering the pressure and of facilitating evaporation by distributing the mass of water in the boiler, and charging it to some extent with bubbles of air. Meanwhile, the facts he adduced are certainly sufficient to warrant a belief that we have here a key to many cases of boiler explosions which have hitherto been wrapped in mystery; and it seems very desirable that careful and precise experiments should be undertaken to prove or disprove the production, on a large scale, of the phenomena thus shown to exist in laboratory experiments.

FIRE EXTINGUISHING APPARATUS FOR SMALL MILLS.

Among mills and factories where the capital invested is too small to admit of the outlay for pumps, hose and sprinklers usually provided in larger establishments, a large proportion remain without any means of suppressing any fire that may break out in the premises, though the ravages of the element in this class would indicate some preventive measures as an absolute necessity.

Forty-five dollars is a liberal estimate for the cost of casks, buckets and auxiliary apparatus in an ordinary four-story mill. The apparatus will last for many years, and may be the means of saving property at any moment. A suitable arrangement for such a mill would be as follows:

For each floor two good water casks with covers to exclude dust, four pails, two axes, two crowbars and one saw. For water casks empty oil barrels are as good as any, if not the best. These should be fitted with covers like cheese boxes, setting loosely over the casks, and having handles to lift them off by. All the salt that the water will dissolve should be put into the cask, both for its effect on fire and as a preventive of freezing. One cask on each floor should be placed near the stairs and the other as remote from the first as practicable; over and about each should be hung two pails, an axe and bar, for reaching quickly such fire as may be lodged in any concealed space, and by the cask on each floor nearest the stairs a medium-sized hand saw. Wooden pails are unfit for this use, owing to their liability to warp, shrink and fall to pieces when handled at a critical moment. Fire pails should be either of leather, paper or metal well galvanized or otherwise protected, preferably the latter two, which neither shrink, crack nor deteriorate with age.

The cost of such an equipment for such a mill would be about as follows:

8 casks @ $1.00 each	$8.00
Covers for same @ 25c. each	2.00
16 paper pails @ $4.80 per doz	6.40
8 axes @ $1.25 each	10.00
8 bars at 1.00 each	8.00
4 saws at @ $1.50 each	6.00
Salt	.60
Painting and placing in position	2.00
Total	$43.00

These figures are sufficiently liberal to cover all freights and other charges, and are for goods of the best quality. Every article should be marked in large letters: "Not to be removed except in case of fire," and instant discharge should be the penalty of disobedience of this rule. Somebody should be charged with the duty of examining the casks at stated intervals, keeping them full and seeing that the other articles are in their places. With these precautions and light expenditures, provision is made for extinguishing any fire discovered in season, with apparatus easily understood and requiring no previous drill for its application and which has proved adequate in a vast multitude of cases.—*The Manufacturer*, (Toledo.)

DOES NOT WANT TO BE GRAMMARED OUT OF HIS INVENTION.

A correspondent who is a practical worker and an ingenious inventor, but not a man of letters, is at present going through the ordeal of a suit which he has brought against a rich railway corporation for infringement of one of his patents. He complains of the twists and strains in which the lawyers and judges seem to indulge over the wording of the patents, by which means they try to jew the patentee out of his rights, and among other things says: "I think whatever is *new* about a patent belongs to the one who has the patent, whether there is a special claim on it, or its parts, or not; and they can't grammar me out of it; for I think I have not got to put my name on every spear of grass in order to own a meadow, whether I mention the word lot or not in my deed or patent."

Our correspondent's idea is a good one. An inventor ought to be protected in the enjoyment of whatever is new and useful in his patented invention, and ought not to be deprived of the fruits of his labors because a sentence in his specification contains a word too much or too little. Our correspondent's idea is in accordance with the spirit of the Constitution, which provides for the issue of patents for the special purpose of encouraging the progress of the arts and sciences. Liberality, encouragement, and the broadest possible protection of the inventor should therefore be the aim of the courts and of the Patent Office. This the constitution calls for. But some of the courts and some of the Patent Office officials occasionally seem to take exactly the opposite view, and appear to labor under the notion that it is their duty to discourage, limit, reduce, and nullify as much as possible the constitutional rights of authors and inventors.—*Scientific American.*

ARE BROKERS GAMBLERS?

The fear that the dealings of brokers on the floor of the Milwaukee Chamber of Commerce may be declared by the Wisconsin supreme court to be gambling transactions has been revived by the intimation of Mr. McGeoch's attorneys that one of their defenses against the suit of Mr. Wells would be to set up the whole business referred to in the latter's complaint as a gigantic gambling deal. Mr. H.M. Finch, of counsel for Mr. McGeoch, sends to the Sentinel the accompanying letter on this subject:

To the Editor of the Sentinel:

SIR—Will you allow me space enough in your paper to correct a slight misapprehension of your reporter as to my allusion to gambling debts in your issue of yesterday. What I said to the reporter, and wanted him to understand, was that there were certain rules of the chamber of commerce of Chicago which the supreme court of Illinois had declared to create gambling debts; that no contract could be made under those rules without being gambling contracts, and that as Daniel Wells, Jr., had declared in his sworn complaint that the contracts were made under those rules, they would, when stated or annexed to his complaint, show that his alleged contracts with Mr. McGeoch were gambling contracts, and thus by his own allegations, verified by his oath, would Daniel Wells, Jr., show on the face of his complaints that his alleged contracts were gambling and illegal contracts. I did not mean to convey the impression that Peter McGeoch would plead gambling. All I meant to say was that if Daniel Wells himself chose to allege that he was seeking to recover $140,000 on contracts made under rules decided by the supreme court of Illinois to be illegal and gambling, that then no recovery could be had therein; then Peter McGeoch would, without doubt, seek "to hoist" Daniel Wells, Jr., "by his own petard!" Daniel Wells, Jr., would then state himself to be a gambler, seeking to recover a gambler's debt.

The validity of the rules of the chamber of commerce of Milwaukee has not yet been decided by the supreme court of Wisconsin. The attorney-general recently made an argument in the Wisconsin supreme court in which he contended that every contract made under the rules was illegal and void and was nothing more nor less than a gambling contract. I opposed these views of the attorney-general, and sought to show that the rules of the chamber of commerce of Milwaukee were widely different from the rules of the Chicago Board of Trade, and that the rules of the Milwaukee chamber were at least *prima facie* valid, but no illegal contract was made by the rules.

The case was fought desperately by the learned attorney-general. He has used every possible argument to sustain his proposition. But if he succeeds in obtaining an opinion of the supreme court of Wisconsin, sustaining his position, then Mr. Daniel Wells, Jr., by his own allegations, will show himself out of court. He will then show himself a gambler seeking to recover the debt of a gambler. And this, it will be remembered, will be his fate, because he himself brings before the court the facts that make him the gambler.

I certainly hope that the supreme court of Wisconsin will not hold the rules of the chamber of commerce illegal and void. But if they do, and the Illinois court adheres to its ruling, Daniel Wells, Jr., on his own allegations, "will go where the woodbine twineth."

Yours respectfully,
H. M. FINCH.

A gentleman well acquainted with the methods of dealing on the New York and Chicago grain and provision markets was asked what would be the effect if the Wisconsin supreme court should make a decision similar to the one made in Illinois, to which Mr. Finch refers in the foregoing:

"You haven't heard of the Chicago Board of Trade going out of business, have you?" he asked. "It doesn't make any difference what the court decides. If a man refuses to pay the debts incurred on the board, either in Chicago or here, on the ground that they are gambling debts, he will be ruled off the floor. But the buying and selling of grain won't stop on that account, and he won't be missed—except by his creditors. There are plenty of deals in grain, provisions and stocks which are perfectly legitimate business transactions, but which run so close to the edge of gambling that no one can mark out the dividing line. The gambling deals cannot be stopped by any statute that can be drawn without stopping or seriously embarrassing an immense amount of honorable and necessary business. However, if a man is anxious to escape payment of a debt on the gambling plea, the decision of the Illinois court might be useful to him—just once. Anybody that should lose money by him a second time ought to lose it."
—*Sentinel, Jan. 28.*

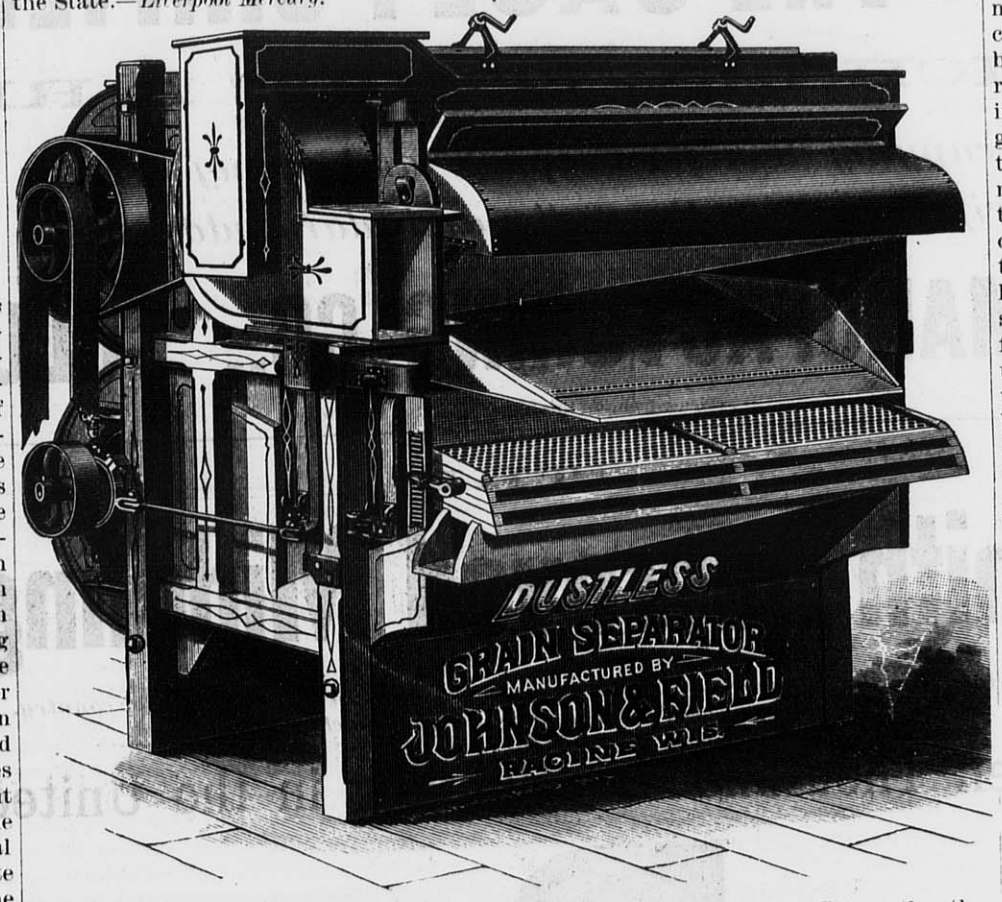
DUSTLESS GRAIN SEPARATOR.

Herewith is given an illustration of a Dustless Grain Separator, manufactured by Johnson & Field, Racine, Wis., U. S. A., who have established an enviable reputation as the manufacturers of one of the best farm and warehouse fanning mills in the market. This machine is the result of careful experiment and an earnest desire on their part to fill a long felt want of malsters who desire thoroughly cleaned barley of an even grade, obtainable with the least labor. Although this separator was not placed on the market until June 1, 1883, they have made large sales of it and received the most flattering testimonials of its efficiency. It is made to *last*, and is of great strength and durability; only the best material being used in its construction; this, combined with skilled labor, results in a perfect machine. The framework is very solid and substantial and made of thoroughly seasoned white ash. All castings, bolts and irons are extra heavy. The shafts are one and one-half inches in diameter and run in babbitted boxes. There are large solid eccentrics, with heavy connecting rods and brass oil-cups on all bearings. The grain boards are covered with heavy sheet iron, preventing the grain from wearing the boards. So much for the separator as a perfect piece of mechanism, and now to its work. It cleans fast, runs easy, and removes all dust and foul stuff without wasting any grain. It has two distinct combinations of sieves and screws, to which a blast is applied which performs the same work in one operation that is usually done in running through twice. It can be run by horse-power or steam. It has large cleaning capacity and will clean much faster than any single machine of equal size. The dustless fan carries all dust and chaff outside of the building or into a dust-box, as the operator may please, thus obviating the great nuisance of having the house filled with dust, to the discomfort and injury of men working therein.

INDIAN WHEAT.

Changing the English Source of Supply from America to India.

A pamphlet entitled, "Indian Wheat *versus* American Protection," has just been published at Calcutta by "The Central Press Company," and has attracted considerable attention on the part of the Bombay Chamber of Commerce, as well as the mercantile community of India. The object is to show the dominant position which India occupies as the source of supply of wheat to Europe, the ease with which the greater part of the English grain trade could be diverted from America to India, and the advantages, both to the English manufacturer and the Indian ryot, that would result from India becoming the sole source of supply of wheat to the United Kingdum. The anonymous author strongly urges the development of the Indian wheat trade by means of cheaply constructed railways, and by the reduction of the rates for the transport of grain to as low a point as those current on the railway lines of the United States, in order that the agricultural interests of India may be able to compete with those of America on equal terms. The annual value of the export and import trade of India during the last thirty years has been steadily progressive, and shows that the extension of railway communication, while stimulating exports in the first place, has always been attended with an increased demand for European and other products. In 1852–'53, the date of the commencement of the construction of railways in India, the exports and imports of British India amounted in all to £32,422,100, whereas in 1882–'83, when there were upward of 10,000 miles of railway open, they amounted to £132,585,850. The writer of the pamphlet goes on to show that these results have been obtained at a time while comparatively high rates for the carriage of goods, and of grain in particular, have prevailed on the Indian lines, and that, if proper facilities were only given our fellow subjects in that country, it could easily supply the United Kingdom with the whole of its annual import of wheat. For example, the total production of wheat in India is not less than 40,000,000 quarters, the average annual import from all countries into the United Kingdom being only about 11,000,000 quarters. The total consumption of wheat in India itself is not great, and yet of the large production just quoted only a small proportion is in ordinary times exported, owing to the difficulty and expense involved in transporting it to the seaboard. Considering the fact that the rates for the carriage of grain are on the East India railways about three times higher than those charged in America, to say nothing of the cost of cartage from the wheat fields, we agree with the author in his remark that "it is not at all surprising that India at present succeeds in carrying off only a portion of the English wheat trade at times when prices are ruling the highest, instead of occupying the position she ought—of being able to dictate her own prices to America." Among the other points referred to in this pamphlet, and which we consider worthy of special attention, is the proposal that the Government should consistently reserve the right of fixing absolutely the rates on all lines for the carriage of cheap staples. This would certainly help the development of the natural resources of the country, and would be following out the policy of the late Lord Dalhousie when he recommended the construction of railways as the only means by which produce could be multiplied and the national wealth increased. The opinion entertained of this remarkably able pamphlet by the Bombay Chamber of Commerce is worth knowing, and, accordingly, in a document which has been forwarded to us, and which is signed by Mr. James Thorburn, as chairman, and Mr. J Gordon, as secretary, that influential body states that, with the remedies suggested for the comparatively backward condition of India, "they generally agree," the paper "abounding with carefully compiled facts and practical hints admirably digested," and "deserving the consideration of all who are interested in the Indian trade and in the progress of India." In the matter of internal communication, it is certainly not satisfactory to be told that India is already about a century behind America, and that every day it is getting still further behind. Meanwhile, apart from the construction of new railways, it appears to us that the whole question of maintenance of the high rates on the Indian lines at present in existence should be reconsidered in the broad interests of the country, and be reduced as early as possible by the Indian railway administration. A State railway system should be used in the interests of the State.—*Liverpool Mercury.*



WHITE BREAD AND BROWN.

One of the most curious circumstances connected with the diffusion of scientific knowledge is the readiness with which, every once and a while, an out-and-out error is accepted by the great public. Says Prof. F. H. Storer, in the *Rural New Yorker:* "Once grasped, the delusion is held with a tenacity which is not easily overcome by anything that can be said or written in the way of precept or discourse. Nothing can well be more absurd, for example, than the current notion that a fish diet is especially adapted for feeding the brain, 'because' (as the story goes), fish are particularly rich in phosphorus, and 'because' large quantities of phosphorus are needed to nourish the brain; for the whole statement, both as to its premises and its conclusion, is simply groundless and untrue. To persons who like this kind of food, fish does, of course, 'yield light and salutary meals,' as the cat said of the canary bird; but this fact turns on the lack of 'heaviness' of the fish, and upon its easy digestibility; and, in so far as any man now knows, not at all upon 'phosphorus,' or any other occult property or component. As a matter of fact, fish is not specially rich in phosphorus, and there is no evidence whatever and no shadow of probability, that either phosphorus or fish 'goes to the head' in the sense of this idle fable.

"Another error, equally unfounded with the foregoing, though perhaps even more generally and firmly believed, is the odd fancy that white bread is less nutritious than brown bread. To any one who believes in the progress of ideas it is not a little disheartening to witness the persistence with which this crude notion is clung to in spite of the very wide and very general experience of mankind to the contrary, and in spite of the fact that the doctrine was explicitly disproved years ago, by careful scientific experiments. It is true enough that there is one good reason why it is well for some persons, possibly for many persons, to eat brown bread occasionally, for the bran contained in such bread is laxative. In the same sense that 'bran mashes' are given to horses to keep their bowels open, so bran bread made from unbolted flour is, in many cases, an excellent article of diet, well fitted to cure or prevent the occurrence of what may fairly enough be called a diseased state of the system. The importance of bran in this regard has been illustrated from time immemorial by the oatmeal of the Scotch; as well as by the comparatively recent use of the 'dyspepsia bread' of Graham, and the 'cracked wheat' of the late Dr. Warren, of Boston. But all this is a matter quite distinct from the simple question of nutrition, that is to say, as it relates to laboring men, and to healthy people generally. There are, for that matter, many other ways of meeting the pathologic difficulty just now alluded to, besides the use of 'whole meal.' Indeed, when taken as a medicament, bran bread needs to be used with caution. It must always be borne in mind, that it is the very fact of its difficult digestibility that makes bran useful for those persons in tolerable health to whom experience has justified its use.

"It commonly happens that some of the constituents of the slowly digesting bran take on an acid fermentation, which tends to make the mass of partially digested food pass more rapidly through the intestines than would otherwise be the case, and it is probable, also, that the mere mechanical action of the coarse, undigested particles of bran may incite the bowels to action by gently irritating their lining membrane. But, on the other hand, it is manifest that, because of its indigestibility, bran bread must be inappropriate food for many delicate persons. There are doubtless abundant instances where a diet of white bread with the addition of stewed prunes, for example, or tamarinds, would be in all respects more wholesome, healthful and nutritious than either oatmeal, cracked wheat or Graham bread. It is probably true, indeed, that the chief reason why the generality of mankind prefer white bread as a standard food, is its comparative lightness and easy digestibility. Most people are less liable to be distressed or made uncomfortable by white bread than by brown, and they esteem it accordingly. It has often been urged as a merit of the black bread of Europe, and of the rye bread also of our New England ancestors, that, besides being cheaper than white bread, it 'stands by' a laborer longer; in other words, that the feeling of hunger does not so soon recur to him after eating brown bread as after eating white bread. But this peculiarity also of the brown bread manifestly depends upon its indigestibility. Since it can leave the stomach but slowly, this organ does not soon become empty, and the sensation of hunger, which is a result of the stomach's being empty, is not felt. But this, again, is a point quite distinct from nutrition, and it is notorious that the peasants who use black bread are compelled to use enormous quantities of it, besides milk and other additions, in order to be adequately nourished. To persons habituated to the use of such coarse bread, great distention of the stomach becomes a second nature, and they are, naturally enough, apt to complain that white bread does not satisfy them.

"The idea is occasionally thrown out that it is more 'natural' to eat the whole grain than the sifted flour; but if there were any truth in this notion, a similar method of reasoning would compel us to show cause why we are not equally in duty bound to eat the outer coverings of potatoes, peaches and apples, to say nothing of the shells of hickory nuts. There is one case, indeed, where a somewhat analagous argument leads to an extremely dangerous popular practice, viz.: the swallowing of the stones of cherries, together with the fruit; but, as every physician knows, the introduction of these wholly indigestible bullets into the stomach not infrequently occasions very grave, or even fatal, disorders; particularly in cases where the person happens to be 'out of sorts' at the time when the stones were eaten. With the progress of physiological knowledge the propriety of excluding all these indigestible matters (bran, as well as the rest) from human food, becomes more and more manifest. Such refuse matters may be excellent for feeding animals, and it becomes us to use them to the best possible advantage—as is in fact already done in many places. It might, indeed, be argued fairly enough, in so far as relates to the question of nutrition, that the oil cake now used for feeding animals, might more properly than bran be employed as human food, for the experiments of the German chemists have shown that of the two substances bran is rather less easily digested by cattle than oil cake. It has been shown, withal, long ago, that, because of its indigestibility, bran cannot be so well utilized by hogs as by neat cattle with their more powerful apparatus for reducing refractory foods.

"All this is matter of common sense and common observation. It is known, furthermore, that in proportion as the nations become more and more civilized, so much the more general does the use of white bread become among them, while the use of brown bread tends continually to be more and more restricted. It is much with nations as with individual families—in proportion as they grow easier as to their circumstances so do they instinctively turn to white bread as the normal food in place of the cheaper substitutes, to the use of which they were formerly compelled by their poverty. The justice of this popular verdict in favor of white bread has been most fully vindicated by numerous scientific experiments. It has been shown, for example, that while the dung of dogs fed upon black bread, rich in bran, may amount to as much as 75 per cent. of the weight of the bread eaten, it does not amount to more than 12 or 15 per cent. when the animals are fed upon white bread. So, too, with men; when fed upon white bread, 5½ per cent. of the bread passed off undigested, against 10 per cent. in the case of bread made from sifted rye flour, and 19 per cent. in the case of bread made from unbolted rye meal. As the result of recent German experiments upon men, it is admitted that while 4 or 5 per cent. of the dry substance of white bread passes off unused, 15 per cent. of the dry substance of black bread goes to waste. Even on a flesh diet, it has been shown that the amount of excrement is increased if bran is mixed with the flesh. From all of which it is plain that any gain, real or supposed, of nutritive matters which might be got by leaving bran in bread is more than counterbalanced by the tendency of the bran to pass rapidly through the intestines, and to carry other nutritive matters with it. It may justly be said of bran—and of the breads and other preparations of which bran forms a part—that, after they have once passed out of the stomach, they hasten the digestive movement and so quicken the passage of food through the intestines that a considerably large proportion of it escapes assimilation and goes to waste than is the case when white bread is eaten. As was said before, this result is just what the physician desires when he recommends that brown bread should be eaten by some kinds of dyspeptic patients; but it is absurd to say, on this account, that the brown bread is especially nutritious.

"So, too, in respect to the saline matters in bran. The most prominent among these constituents are the phosphates of potash and of magnesia; but even the whitest flour contains a considerable amount of these things, to say nothing of the fact that they are abundant in many other kinds of food which are habitually eaten. Few people who are well enough off to use white bread, and who are accustomed to the generous diet which its use implies, are ever likely to run much risk of suffering from a lack of the ash-ingredients which are prominent in bran. Besides all this, it is notorious that these constituents are so impacted and concealed in the woody fiber of the bran that, practically, only a comparatively small proportion of them is digested and absorbed. It is not, however, by any means the saline matters found in bran that are most liable to be absent from human food; and, even if we did stand in special need of these things, it would be an easy matter to supply them as such, as has in fact always been done in the analogous case of common salt—a substance which is needed by the animal economy, and which is inadequately supplied to it by most foods."

INDIA AND THE WHEAT SITUATION.

The facts set forth and conclusions drawn, based upon observations made on a recent tour in India and contained in a letter written by me from Madras, have been made the subject of a variety of comments by the press of this country, and much incredulity has been expressed touching some of the positions therein taken. The importance of the relation which the wheat production of India bears to the same industry in America warrants a further elucidation of the matter. And in the first place, in reply to the assertion which has been made in some quarters, that the wheat export of India would not, or could not, materially increase, the fact that it has done so is more conclusive than any argument can be. I am reminded by this phase of the discussion of the retort made by the man who, having been arrested and imprisoned for some misdemeanor, was enlightened by his lawyer as to the legal status of the case: "They can't put you in jail, you know, for a thing like that," said the attorney. "Well, perhaps they can't," was the philosophical reply, "but you see they have."

It is not only in America that predictions have been confidently made that India would not attain the rank of a wheat-producing and exporting country, and compete as such with other countries pursuing that industry. The English farmers have strenuously insisted on the same view, and have all along maintained that the large exports from India were simply drawn from an accumulated supply of former years, and were not a token of continuous productive ability. Each succeeding year the fact of a heavy export from India has been met with this explanation, though an obviously inadequate one. It would seem that the English wheat-growers, along with those of other nations, who find in Great Britain, the great food-consuming country, a market for their products, have been prompted in this belief rather by jealous feeling than by any facts in their possession bearing upon the question. Disliking to face the prospect of a new and dangerous rival, our farmers have accustomed themselves to treating this ever increasing exportation from India with apparent indifference, and have drawn conclusions born of their own hope, rather than a logical deduction from the facts.

Independently of specific evidence as to the soil and resources of India, and its capacity for the production of wheat, the fact is a significant one that although the Indian farmer plows his ground with a forked stick and employs in all respects the crudest methods of tillage, he succeeds under these conditions in raising an average of a little over eleven bushels of wheat per acre, varying but slightly from the average yield in this country, where we have all the appliances of science and skillful methods of farming. This would seem to be sufficient evidence that the climate and soil of India are even more favorable to the growth of wheat than our own, and we are justified in inferring that if the same improved methods and appliances were employed in India, and with the same intelligence as here, the outturn per acre would be much increased over that in America.

There are in India 150,000 square miles, or nearly so, of land that has not been cultivated, but lies wild and waste, that is suitable for the culture of wheat. The Punjaub alone contains over 30,000 square miles of such land, the northwest provinces and Oude over 50,000, and the central provinces and Bombay nearly 60,000 square miles. The recent opening of the Sirhind canal, as stated in my former letter, will add more than a million acres to the wheat-growing area. Moreover, it must be borne in mind that of the wheat raised in India a larger proportion is available for export than in almost any other country, since the inhabitants are not a wheat-consuming people. Rice and millet are the great food staples, and on these they mainly subsist. And since it is evident, from what has been said of the crude methods of farming now pursued, that the land now under cultivation for wheat can be more than doubled in its production, it follows that an enlarged demand arising from an increase of population will be readily met within the present wheat area. The production derived from the utilization of new and hitherto waste land will therefore be wholly realized as an addition to the exportable surplus.

Nor has the home government been unmindful of the capabilities of increase thus waiting to be turned to account. Recognizing the importance of developing the resources of its great dependency, it is making exertions to that end in every direction. Among other active measures of this kind by the British authorities, a careful study has been made by them of the wants of the ryots or farmers in the way of improved implements and machinery. While at Madras I was shown by the directors of the State Agricultural farm a number of plows, constructed with a special design and of peculiar style, to meet the requirements of the Indian farmer. These were being widely and gratuitously distributed by the English government among the native farmers for the purpose of encouraging them in the use of improved machinery. Besides these are large quantities of plows and other implements, adapted with studious care to the wants of Indian agriculture, and constantly sent out by the home government to be sold at a mere nominal price. It seems to be the English policy to encourage, by the distribution of the best instruments of English make, the highest system of agriculture.

Great care is exercised, not only in Great Britain, but in India as well, by both the native and English authorities, in the selection of seed and the introduction from foreign countries of the best varieties found suitable for the soil of India. Every method is recommended for adoption which tends to improve the quantity and quality of the product and its condition in the market. Among other means of encouragement, it is the policy of the English government, both at home and in India, to cheapen railway transportation. They have already, by the united exertions of those interested in the grain market in India, forced down the rates of freight some two shillings to the quarter within the past year, and measures are on foot to effect a still greater reduction. At present the Indian railways have no trains or cars suitable for the carriage of grain from the interior to the seaports, such as Kurrachee and Bombay. When once proper attention is given to the construction of cars and the general adaptation of railway facilities to the transportation of grain, it is beyond doubt that the traffic, and the industry which is fostered by it, will show a very rapid increase. So important has this product become to the government at home, as well as in India, that they now recognize it as the leading crop. The magnitude of the interest is so fully recognized, according to the Bombay *Times* and other Indian journals, that within the last few weeks the presidencies of Calcutta and Madras have given special attention to it, and are making united efforts toward the development and encouragement of this industry.

Large as has been the exportatiou of wheat from India, it is no doubt susceptible of still further increase simply by the extension of the railway system. Many sections of India that are favorable to wheat-growing have as yet no outlet. While at Hyderabad I was told by the Surgeon-General of India, who is located in the central provinces and the Berars, that he had known large quantities of wheat to go to waste simply for want of railway facilities for transporting it out of the country and getting it to market. There is now under contemplation the building of from 10,000 to 15,000 miles of railway, and those who are informed as to the facts confidently assert that there will be sufficient traffic to pay a dividend upon the capital thus invested. Should these projects be carried out they will open large territories in the central and northwestern provinces and the Berars that are in the highest degree adapted to the growth of wheat. Canal enterprises on a large scale have also been executed or are now in progress for purposes of irrigation and navigation, the government making strenuous exertions to induce the Indian farmers to use the waters for irrigating their lands. As this practice becomes general it will insure both a larger and a more certain yield of the harvest.

Already the figures which show the extent of wheat exportation from India have reached a formidable annual total, and indicate a sure as well as rapid growth. The first trial cargo was sent to Europe less than ten years ago, and in 1875 the export was about 1,500,000 bushels. Siuce then it has steadily increased, with the exception of a falling off in the famine year, until in 1881-82 it exceeded 37,000,000 bushels. How the exportation for the year just closed will compare with that of the previous year, we may infer from recent statistics given by London journals as to the export from Bombay and Calcutta for the first nine months of 1883. These figures show, for those two ports alone, the enormous increase of 9,800,000 bushels over the same period in 1882, being an excess of more than 50 per cent. And this has occurred in spite of the fact that wheat is selling this year for several shillings per quarter less than last year—a circumstance which affords conclusive evidence that the increased exportation is of a permanent nature, and not the result of merely temporary causes.

That the price of wheat in America has been, and must necessarily be, affected by the development of this new and abundant source of supply for the European market is a conclusion so inevitable that it hardly needs to be pointed out. Yet, clear as it is, a disposition is manifested to ignore or deny it. During the last and the present year India has shipped, say 80,000,000 bushels of wheat, representing a value at the port of New York of not far from $100,000,000. Not only has the American farmer been a direct loser by this reduction of the demand for his product, but he has indirectly suffered in still greater degree by the resulting depreciation in price of his whole crop, whether consumed at home or sent abroad. If we may suppose the condition of our own and the European market to be now the same as it was seven or eight years since, before India had been heard of as a competitor in this field, the question suggests itself, whether, but for this annual Indian export of from thirty to forty millions of bushels, wheat would now be selling in Chicago for 96 cents and under. It is a question to which there is obviously but one answer.

It is the great agricultural exports from this country that beyond all else secure to us the enjoyment of good times and business prosperity. These exports, which constitute one-fourth of our entire agricultural product and fully three-fourths of all the commodities we send abroad, not only bring a large amount of wealth to the country, but give vast and constant employment to our railways and waterways. The exportation of wheat from India in two years, viewed in the light of its relation to our own industry, represents a loss not only of abaut $100,000,000 to our own farmers, but of nearly 3,000,000 tons of freight to the transportation companies of the United States. It is needless to point out the manifold ways in which such a subtraction from our export trade must make itself felt in all employments, and to the detriment of all branches of business.

Great Britain is the great food-consuming country of Europe, and is under the constant necessity of supplying the deficiency of her own product by purchasing abroad. In obedience to the law of self-interest, she seeks the most favorable market. As the case now stands, it is evident that India is her best market for the purchase of wheat, for she can buy it there most cheaply. Even though India wheat should be quoted in Liverpool in shillings and pence at the same price as American wheat, yet to the British it is cheaper. They will pay for the wheat they procure from India in articles of manufacture which they themselves produce, and on which they make a profit. The grain of India is less in price to them by the amount of profit they derive from the goods in which they pay for it. Their grain trade with India is in fact simply a development of one of the resources of their own empire. It furnishes profitable employment within their own dominions for capital which would otherwise flow to other countries not under the British rule.

It appears to me vitally important that the facts in regard to wheat culture in India, both in its present and its probable future status, should be intelligently comprehended. Having a direct tendency to reduce our own exports in a very material degree its bearing upon our interests demands that we should at least inform ourselves fully as to its progress. The export of wheat from this country is now at the rate of 80,000,000 to 85,000,000 bushels per annum, against nearly double that quantity a few years since, when scarcity prevailed in England and France and India had not taken rank among wheat-exporting countries. We have to prepare ourselves for a situation which exhibits radical changes not at all in our favor. Not only is the deficiency of crops in Europe itself less marked, but India has now reached nearly one-half our own rate of export and can supply about one-half the total import requirement of the mother country. On the 1st of November last, and again on the 1st of December, the London charts of wheat on passage and off coast showed the India supply to be greater than that from all other countries combined, the United States only excepted. Whether even this exception can be permanently maintained is the question we have to meet in view of a rivalry whose recent birth renders its vigor the more surprising. On a subject of such grave importance to our national welfare we should seek the fullest light and most complete information, since it is clear that nothing can be gained by an avoidance of the fact.

The importance of guarding the great agricultural interest of this country with jealous care is manifest from a brief retrospect of that industry for the past ten years, revealing what a mighty factor it has been in the maintenance of the commercial prosperity of the nation. Not only have the farmers and planters of the United States raised for home consumption in that period $20,000,000,000 worth of produce, but they have supplied about $6,000,000,000 worth for foreign use. How important a part the wheat crop of this country constitutes of the grand total of exports is shown by the fact that from 1873 to 1883 about one-fourth of the whole value of exports was made up by wheat and flour. The export of those articles for the period named was over 1,200,000,000 bushels. We may safely calculate that fully one-half of this great aggregate was due to the deficiency of crops in Europe during those years; for taking the average quantity exported a few years prior to 1873 and the present rate of exportation as a joint basis of estimate, the result would be for ten years, at least 600,000,000 bushels less than was actually sent abroad. The enormous exportation of our products since 1873 created, for the ten years ending with 1882, a balance of trade in our favor amounting to over $1 000,000,000, contrasted with a balance of equal amount against us for the period beginning with 1856 and ending with 1872. It has given 80,000,000 tons of freight to be carried by rail and water eastward, a distance of over 1,000 miles, worth to carrying companies $400 000,000. It has given a like amount of tonnage from this country to Europe, taxing to the utmost the transatlantic carrying capacity, and yielding, at a low estimate $400,000,000 to the ocean commerce of this country and Europe. Unfortunately, the United States has been almost wholly deprived of its share in this valuable trade by the unwisdom of our commercial and fiscal policy, which has operated to hand it over to our foreign competitors, more than half of it falling to Great Britain. Further than this, American agriculture has given to the domestic carrying trade of our own country, during the ten years in question, probably 500,000,000 tons of freight for internal distribution. These few salient points only serve to show what a gigantic factor the agriculture of the nation has become in its general economic scheme.

Since two things are apparent—first, that one-fourth of all the agricultural products of this country find a market abroad, and the price of the whole crop is therefore fixed in foreign lands; second, that by reason of the higher price they have to pay for what they consume, but do not produce, the necessary outlay of American farmers and planters, independent of the cost of labor and fixed investment, exceeds that of a like number of agriculturists in Europe and Asia by more than $500.000,000 a year—a sum greater than the estimated average annual net profits of all the manufacturers of America during the past ten years—is not therefore the real problem for us to solve, whether our farmer, so handicapped in the race can hold his own against his foreign competitor, who can save over $500,000,000 in the purchase of his supplies, while producing a crop of the same aggregate value. On the ability of our farmers to successfully maintain this struggle hangs the material well-being of the nation. It is through them that its existing wealth has been accumulated, and only as they continue to thrive can it hope for future prosperity.

JOHN W. BOOKWALTER.

NEW YORM, January 5.

PEANUT FLOUR.—No doubt ere long "peanut flour" will be an important product of the South. Virginia is set down this year for 2,100,000 bushels, Tennessee for 250,000 and North Carolina at 135,000 bushels, these being the chief States engaged in their cultivation, and those in which it was first introduced from Africa. In Virginia they are called "peanuts," in North Carolina "ground peas," in Tennessee "goobers" and in Georgia, Alabama and Mississippi "pinders." Virginians are beginning to turn the peanut into flour, and say it makes a palatable "buscuit." In Georgia there is a custom, now growing old, of grinding or pounding the shelled peanuts and turning them into pastry, which has some resemblance, both in looks and taste, to that made of cocoanut, but the peanut pastry is more oily and richer, and, we think, healthier and better every way. If, as some people believe, Africa sent a curse to America in slavery, she certainly conferred upon her a blessing in the universally popular peanut, which grows so well throughout the Southern regions that we shall soon be able to cut off the now large importation altogether.—*Savannah Telegram.*

FLAX BELTING—A foreign exchange reports that the latest patent in bands used for machinery is one for an invention by which it is claimed the only good belt made of textile fabric can be produced; it is not effected by change of temperature, stretches very little, is thoroughly waterprooof, is as durable as leather, and being without the objectionable joints and splicings of a leather belt, it runs straighter and truer. The belt is made solely of the best Russian flax, and in price is from 25 to 60 per cent. cheaper than leather belting. The unusual strength of the belting results from its being folded somewhat peculiarly, and which also accounts for its stretching so little. It is rendered waterproof by an entirely new process, known only to the Russian government, the peculiarity of which process gives it a marvelous grip of the pulley, and, no matter how long the belt is used, this never leaves it. The flax belt has been in use in Russia for more than two years and a half, and it has give the greatest satisfaction.

[Translated from the German by E. A. Bowring.]

THE PAGE AND THE MILLER'S DAUGHTER.

BY GOETHE.

PAGE.
Where goest thou? Where?
Miller's daughter so fair!
Thy name I pray?

MILLER'S DAUGHTER.
'Tis Lizzy.

PAGE.
Where goest thou? Where?
With the rake in the hand?

MILLER'S DAUGHTER.
Father's meadows and land
To visit, I'm busy.

PAGE.
Dost go there alone?

MILLERS' DAUGHTER.
By this rake, sir, 'tis shown
That we're making the hay;
And the pears ripen fast
In the garden at last,
So I'll pick them to-day.

PAGE.
Is it a silent thicket I yonder view?

MILLER'S DAUGHTER.
Oh, yes! There are two;
There's one on each side.

PAGE.
I'll follow thee soon;
When the sun burns at noon,
We'll go there, ourselves from his rays to hide
And then in some glade all verdant and deep—

MILLER'S DAUGHTER.
Why, people would say ———

PAGE.
Within mine arms thou gently wilt sleep.

MILLER'S DAUGHTER.
Your pardon I pray!
Whoever is kissed by by the miller-maid
Upon the spot must needs be betrayed.
'Twould give me distress
To cover with white
Your pretty, dark dress.
Equal with equal! then all is right!
That's the motto in which I delight.
I am in love with the miller boy;
He wears nothing that I could destroy.

THE ORIGIN OF STEAM GRAIN ELEVATORS.

The idea of raising material by a revolving clain of buckets was not original with Oliver Evans. Long before his day travellers in Egypt had seen upon the banks of the Nile the rude wheel over which passed a rope with buckets attached, drawing up the water and emptying it into troughs for irrigating purposes. This process is old enough to form parts of divers basso-relievos and rude drawings far back in the days when what we call "ancient history" was making. Thomas Jefferson wrote against the claims of Evans a learned paper, in which he showed that this method of lifting had come down to us from remote antiquity. Yet none of these facts detract one iota from the ability of Evans, or his reputation as an inventor. The man whose absolutely "new idea" dies with him has done far less for the world than he whose successful application of an old idea has revolutionized an industry.

In the year 1785, when Mr. Evans was struggling to force his improvements in milling upon an unwilling world, the spot where Buffalo now stands was the abode of savages. Half a century later the elevator idea was applied to the extensive transfer of grain at this point. Yet another half century has passed, and the grain elevator is as much a part of every grain-handling port in the world as are the spiles to which the ships make fast at the wharves. To Buffalo belongs the honor of giving to the world the steam grain elevator. And as the circling of events is bringing back to the Queen City of the lakes her ancient prestige as a grain and flour center, it is meet that the *Roller Mill*, "being to the manner born," should publish the facts in the case. We have been aided in obtaining the facts and dates by a paper read before the Buffalo Historical Society in March, 1865, by the venerable Joseph Dart, to whom is due the high honor of originating the elevator system here which now makes possible the rapid handling of grain at every port in Christendom.

Mr. Dart died September 28, 1879, in his 81st year, having had the unusual privilege of seeing his idea take root flourish and "spread itself like a green bay tree" over all the civilized globe. No more modest retiring man lived among us than Joseph Dart. He passed his last hours tranquilly in the city to whose growth and prosperity he had contributed so much and whether as a citizen, "on Change," as a neighbor, or in the family circle, he was loved while living, and missed when dead. Mr. Dart said that nearly fifty years before he built his elevator in 1842-3, grain had been raised from wagons in this manner. He says, upon the authority of the late John T. Noye, that in 1824 the latter's father rented a flouring mill on the Bronx River, near Kings Bridge, New York; that to this mill was attached an elevator for unloading grain from vessels, for the use of the mill. This mill seems to have been erected some ten or twelve years prior to its rental by Mr. Noye's father.

But these isolated, we might say sporadic cases, simply show that there was a tendency towards the revolution which it was reserved for Joseph Dart formally to inaugurate. Up to 1835 Ohio was the only State sending grain to Buffalo. The total receipts at this port that year were only 112,000 bushels, including all kinds of grain. But from that time there was a rapid increase. The very next year, 1836, brought to us a total of half a million bushels, which mounted up to nearly two million bushels in 1841, or about four hundred per cent. in five years. Mr. Dart, at that time in the vigor of manhood, with the clear vision of the "man of the future," saw the probable outcome of this rapid growth. He realized the amazing extent of the grain-producing districts of the then "far West," and had unbounded faith in the commanding position of Buffalo in directing this great tide of golden grain in its current toward the sea. The report of the Chairman of the Ways and Means Committee, in the New York Assembly of 1838, Hon. Samuel B. Ruggles, and a series of letters on internal improvements and the commerce of the West, by Gen. Dearborn of Massachusetts, then temporarily a resident of Buffalo, added their weight to Mr. Dart's own meditations on this vital question. The fact that the views of these gentlemen fell short of the actual truth did not save them from being considered extravagant and visionary. Mr. Dart's active mind did not stop with a mournful consideration of the great delays incident to the transfer of two millions bushels of grain at this port in 1841. He set to work to create facilities for handling such quantities of grain not only, but the increase which he saw must rapidly come.

Up to this time the grain was raised from the holds of vessels and canal boats in barrels, by a tackle and block, to weigh it with hopper and scales swung over the hatchway or to be carried into the warehouse in bags or baskets on the shoulders of men. Only ten or fifteen bushels could be weighed at a time, and in fair weather the best that a full set of hands could do in a day was to transfer some 1,800 or 2,000 bushels. In bad weather every thing was at a stand-still, and some authorities say that at least one-fourth of the time, on an average, was lost by rains or high winds. The harbor often became crowded with vessels waiting for a change of weather. In 1841 Mr. Dart determined to try steam as a remedy for this great and growing evil. He believed that he could construct a building with large capacity for storage, and having, besides its grain bins, an adjustable elevator and conveyors, to be worked by steam, so arranged as to transfer grain from vessels to canal boats or to the bins in his warehouse, with great rapidity, and at small cost. In undertaking this task Mr. D. had not only mechanical difficulties to overcome, but also the insane prejudice against labor-saving machinery so characteristic of certain portions of the human family. But, spite of difficulties and discouragements, Mr. Dart persisted, and finally, in the autumn of 1842, began the erection of his elevator, on Buffalo Creek, at the junction of the Evans ship canal, where now the great Bennett elevator stands, which replaced the ruins of Mr. Dart's experiment, destroyed by fire.

Mr. Dart said that Mr. Mahlon Kingman had already tried a somewhat similar experiment, and after putting horse power machinery into an old warehouse, made an attempt to unload a vessel. But the effort signally failed. Indeed, Mr. Dart relates that, while his elevator was building, Mr. Kingman passed the spot, and tapping the enthusiastic builder on the shoulder, said: "Dart, I am sorry for you; I have been through the mill; it won't do; remember what I say: Irishmen's backs are the cheapest elevators ever built." Soon after the Dart elevator was in active operation Mr. Kingman came to its proprietor about two or three o'clock in the afternoon to get two canal boats loaded that day. Mr. Dart reminded him of the remark he had desired him to remember. His reply was: "Dart, I find I did not know it all."

Mr. Dart's experiment was a practical success from the first stroke of his engine. He has left it on record that, within a month after he started, a prominent forwarder, who had confidently predicted that shippers could not afford to pay the charges of elevating by steam, came to him and offered him double rates for accommodation; but the bins were all full.

To show the saving of time effected by Mr. Dart's device, one incident will suffice. The schooner J. B. Skinner came into port early in the afternoon with 4,000 bushels of wheat, was discharged, received a ballast of salt, left the same evening, made her trip to Milan, brought down a second cargo of wheat, discharged it, and on her return to Milan left Buffalo harbor in company with vessels which came in with her on her *first trip down*, and which had only just succeeded in unloading their cargoes of grain by the old, back-breaking method. The buckets of the first steam elevator held about two quarts each, and were placed twenty-eight inches apart on the belt. With this Mr. Dart raised without difficulty a thousand bushels an hour, though eight hundred was the highest figure deemed possible by his opponents. He soon reduced the distances between the cups and increased their size till two thousand bushels an hour were easily handled. The storage of this elevator at first was 55,000 bushels, which was doubled three years later.

We cannot, at this time enlarge upon the subsequent growth of elevators in Buffalo. But though it has been large, we confidently predict that the next few years will greatly increase our capacity. It is a fitting thing that the city which gave to the world the steam grain elevator should become one of the greatest milling and grain centres of the American continent. And it would be but a fitting tribute if the Buffalo Board of Trade should, in connection with their new and commodious building, erect some sort of a memento of the man whose keen foresight enabled Buffalo to handle the floods of cereals from the fertile plains of the West.—*The Roller Mill.*

VENTILATION OF MILLS.

The object of mill ventilation is, on the one hand, the introduction of air between the grinding surfaces of the stones, to keep the flour cool, *i. e.*, to prevent an injurious heating of the same; on the other, to increase the capacity of the mill.

The principal cause of over-heating is due to excessive charging of the stones, necessitating increased velocity, in consequence of which the ordinary precautions, such as a sufficient number of furrows, their form and depth, etc., are insufficient to prevent injurious heating.

It is for this reason that the ventilation of stone mills is the most efficient remedy. It can generally be effected by forcing air between the stones or by drawing it off. The running stones may also be provided with inclined grooves which become narrow below. By the revolution of the stones they draw in air. The cross-section of the groove should be such as to form a narrow slit at the grinding surface. This method of ventilation is rejected in many mills on account of the expense of cutting the grooves and because they very often become clogged.

In high milling, on account of the greater distance between the stones, the flour is not so much liable to be heated, but in low milling ventilation is decidedly necessary.

We would give preference to ventilation by suction, and specially mention the arrangement of Joaks and Behrns. In this method, the runner is provided with a ring, through which a similar ring slides. The latter is supported by a leather hose, fastened to the rim cover.

The exit tube for the flour is closed by a valve, upon which the chop accumulates, and by so doing cuts off the air. To prevent stowage and to discharge the flour, a winged screw is set in rapid motion by being connected with the spindle.

The method of drawing in the air, without dust, is very ingenious. A wire frame covered with folded cloth is firmly fastened to the upper edge of the running stone. The filter gives free passage to the air, but not to the dust. By means of an automatic arrangement, the dust is from time to time beaten from the filter.

Another advantage of this ventilation is, that it is absolutely fire-proof, for even if the dust should ignite in the mill, the flame could at most singe the filter, without spreading any farther.—*Allg. Muehl. u. Masch. Ind. Ztg.*

DRAUGHT-TUBES OF TURBINES.

In a paper on the water-power of the Falls of St. Anthony, read by Mr. J. P. Frizell, at the Annual Convention of the American Society of Civil Engineers, at St. Paul, Minn., we find the following passage which is worthy of careful consideration:

A conspicuous instance of the misuse of power is furnished by the draught-tubes with which almost every wheel is provided. The usual arrangement of the wheel is this: A vertical shaft is carried well down into the limestone. A shelf or ledge is there left around the shaft, and the latter is carried with diminished diameter through the limestone and to the necessary depth in the sandstone. On this shelf, rests the platform which supports the wheel. The water is discharged from the wheel through a draught-tube, which reaches down below the surface of the water in the wheel-pit. The water thus acts not directly, by its weight above the wheel, but indirectly by diminishing the atmospheric pressure below the wheel. These draught-tubes are almost invariably too small. I give a few instances:

A 54-inch "New American" turbine, acting under a head of 48 feet, has a draught-tube 52 inches in diameter. The wheel is stated by the makers to discharge, with full gate, 216·45 cubic feet per second under a head of 40 feet. The effective head, as we shall see, is about 44 feet, and consequently the discharge with full gate should be 227·27 cubic feet per second. This would require a velocity through the draught-tube of 15·41 feet per second, corresponding to a head of 3·69 feet. Adding the frictional head in the draught-tube, assumed to be 21 feet long, we have 4·10 feet for the loss of head at this wheel, or about 1·12 the total power of the wheel. With the wheel running at full gate, this loss amounts to 1-4 mill powers, worth commercially some $1400 per annum.

In another mill, the proprietor is now putting in a 40-inch Victor wheel, to work under a head of 43 feet, provided with a draught-tube 40 inches diameter. We shall find the effective head here to be a little over 37 feet. The discharge, under a head of 37 feet, is given by the makers as 155·3 cubic feet per second. This implies a velocity of 17·8 feet per second in the draught-tube, involving a loss of head of 4·92 feet. Adding 0.59 feet for the fractional loss of head in the draught-tube, assumed to be 20 feet long, we have for the total loss of head 5-51 feet, or something over one eighth the total value of the wheel. These are only two instances taken at random, and might be multiplied to any extent.

The waste of power is not the only evil result of this gross disregard of the law of hydraulics, The inordinate velocity with which the water is discharged from the draught-tube is very destructive to the wheel-pit. On one occasion, a miller had used his raceway for a common sewer of his mill, a use which rendered the wheel-pit tolerably safe from inspection. Having occasion to visit it, he found a cavity under the draught-tube some 30 feet in depth. Nothing disconcerted by so trifling an accident, he filled up his pit and set his mill to running again. But when the owner of the adjoining mill, in attempting to deepen his race, pumped up materials recognized as coming from the above-mentioned pit, it was felt that the limits of safety had been reached, and the latter enterprise was discontinued.

Some of the millers, with a praise-worthy determination not to be beaten in this combat with the laws of nature, have lined the bottoms of their wheel-pits with boiler-plate. If they would put sufficient iron in their draught-tubes, I think they would have no occasion to use that material in their wheel-pits.

A SERIOUS evil with which plumbers have to contend everywhere, says the *Sanitary News*, is the contract system, which has prevailed in building from time immemorial. It has stood in the way of scientific and sanitary plumbing, just as it has of good carpentry and brick-laying. Too many—in fact most houses in a city are built for purposes of speculation either by sale or rent. The one thing in mind is a pleasing, if not attractive exterior. Convenience of arrangement cuts some figure, but the quality of the house does not enter at all into consideration, except so far as that it shalll not tumble down until money has been made out of it. Under such circumstances the construction of a house is given to the lowest bidder. It makes no difference as a rule, whether he is skilled in any of the various trades necessary to good house-building; he can be carpenter, roofer, tinner, plumber and bricklayer, all in one. At the present time, in Chicago, a row of houses is being built by a contractor who has let the plumbing to a tinner; the latter has no knowledge whatever of plumbing, but his supposed ability to connect pieces of pipe secured for him the job—at figures, of course, which no honest plumber could accept. Not only does the better element of plumbers suffer by such competition, but good plumbing is an impossibility, and the house-occupier must suffer. Another, and by no means the least important, view of this matter is that the plumber must have a chance. He is engaged in a calling which is not only honorable, but absolutely necessary to the health and comfort of city life. If he is deprived of the means of subsistence, to say nothing of improvement, he cannot serve his fellow-men acceptably. The plumbing bills of some eastern houses are said to have amounted to $15,000 or $20,000; reliable, sanitary work was secured. In Chicago the most that a contract job pays is a few hundred dollars, and in such cases the work is necessarily imperfect. Let house-builders have their plumbing done by the day and by competent men. Architects can do much to bring about a reform in this direction, and the master plumber's association should refuse to allow its members to come into ruinous competition.

A BUTCHER who was afflicted with obliquity of vision, known as strabismus, was about slaughtering a bullock, and he employed a little negro to stand by the animal's neck, grasp his horns and hold his neck steady so it might be assured that he would be knocked down. As the butcher poised his axe in the air he seemed to be looking directly at the negro instead of at the bullock. "Look here! Look here, bossy," exclaimed the darkey with a great deal of nervous trepidation, "is you gwine to strike where you is looking?" "Of course I am, you black scoundrel," was the reply. "Den you get somebody else to hold de bullock," ejaculated the negro. "You isn't gwine to knock dis chile's brains out."

DETROIT FLOUR AND MILLING.

We have recently received from John K MacIver, Esq., Secretary of the Detroit Board of Trade, a copy of the Report of that body for the year 1883, from which we make the following extract:

Prices of flour have averaged a little lower than they did during 1882, and commission merchants state that their sales have increased considerably. The increased demand has been chiefly for local use, and shipment to points on the shore of Lake Huron. These Lake Huron towns are steadily increasing in population, and with that increase the demand for daily bread becomes greater. The manner in which Eastern dealers obtain their flour has changed greatly in the past twenty years. Long ago they bought largely through Detroit commission merchants, and the revenue thus obtained was very large. Recently Eastern merchants have found it more profitable to make their purchases direct from the mills in Minnesota, and in this way Detroit has been left out in the cold. The year 1883 has been an eventful one in the flour trade. The mill operated by Jennings & Green was discontinued, and the firm name changed to the Holly Milling Company. Their mill is now in Holly, instead of Detroit. About midsummer the mill of Hinkle & Voorhees was burned down, and by this disaster Detroit's output of flour was reduced by 1,000 barrels per week. The mill will be again in operation in 1884 with a capacity of 500 bbls per day, and will then make up in some degree for the loss sustained in 1883.

The mill operated by Perrin Bros. was shut down half the year for repairs and improvements, which also reduced the production of flour considerably. The Union mill has been running all the year, and has managed to more than make up the discrepancy caused by the misfortunes and improvements of other mills.

A wide difference exists between the quality of flour produced in 1882 and that of 1883. In the former year several mills ground nothing but rejected wheat, producing flour of a low grade. In the latter year rejected wheat was not so plentiful and a much better grade of flour was produced. Minnesota flour has gained considerably in favor recently, and the receipt of it at Detroit continues to increase.

DETROIT MILLING DURING THE YEAR 1883.

A circular letter inclosing forms for report was sent by the Board of Trade to the different city mills. Some of the replies are not as full as they might have been, but a fair approximation of the business of the city can be made:

	Barrels.
Total production of mills	246,964
Of which shipped by rail	150,738
Of which shipped by lake	5,600
Of which shipped through to Europe	13,437
Of which sales in city	77,189

The wheat used is reported as 1,121,361 bushels, of which 971,361 bushels were received out of elevators and off track, and 150,000 bushels were delivered by farmers' teams.

A comparison with last year may be interesting:

	1883.	1882.
Receipts from elevator and off track, bushels	971,361	707,545
Receipts from farmers' deliveries	150,000	176,956
Total bus. of wheat used by mills	1,121,361	884,501
Barrels of flour produced	246,964	188,120

The increased production, viz., 58,844 barrels, is not as great by 25,000 barrels as might have been expected from a comparison of the receipts and shipments of flour with those of last year, and would imply either that the stock is less than at this time last year, or that consumption has decreased. As passing vessels draw for supplies on Detroit stores, the per capita consumption is probably a variable quantity.

The price of wheat varied within a very small range, and only once did it change sufficiently to justify millers in following it with a change in flour quotations. This happened in October, and the change was a reduction of 25c per bbl. on roller process flour, while stone flour remained unchanged. The year's prices averaged lower than ever before, as will be seen by the following comparative statement.

REPAIRING A VACUUM—A correspondent who gives us some mechanical anecdotes, mentions an incident which illustrates the difficulties encountered by injectors when first introduced. A lifting injector was put on a locomotive belonging to a small road in Pennsylvania. It worked all right for a few weeks, then it got so that they could not lift the water. The whole mechanical department of the plug wrestled with the injector without avail. A machinist who knew something about the principle of injectors, happened about the engine when the man who was substitute for a master mechanic was trying to start the injector. The machinist said: "I know what is the matter with that injector. The throttle is leaking and destroys the vacuum." "Well," said the M. M. substitute, "you take the vacuum out and I will send it to Philadelphia and get a new one."—*American Machinist.*"

An exchange quotes the screed of the Philadelphia *Record* against trade journals. The publication of such malicious statements as made by this paper that hails from the city of Brotherly Love are rare—more so than the feelings which prompted them. Great daily newspapers, as a rule, do not take kindly to trade papers. The management of one of the big dailies of this city hates trade journals with a hatred that is undying. The reason it does so is simply a matter of business. The leading trade papers carry large lines of advertising that the Chicago daily, or any other daily, cannot touch. Advertisers have a way of paying their money where it will bring them the largest returns. A machinery manufacturer might ordinarily as well throw his money into the sewer as to pay it for advertising space in a daily newspaper. No matter what kind of machinery a shop may turn out, there is the trade paper in which the merits of the machine can be presented, and that will go before the very people desired to be reached. There is another reason why the average newspaper does not hug its trade journal neighbors very lovingly. Many of these newspapers would like wonderfully well to monopolize all the news. This in the present condition of things they cannot do. They have not the means of obtaining the news pertaining to a particular industry that the paper has that represents that industry. The newspaper reporters who are assigned to "write up" the subjects which are handled by the trade papers invariably bungle them. The average reporter is a man of few parts. He records what he sees, but he has no time to make a special study of anything. It is no wonder then that he fails when he attempts to treat a subject that has many bearings. Yet, notwithstanding the attitude of some of the great newspapers toward the trade journals, the latter seem to thrive admirably. The old ones grow stronger year after year, and new ones are born. This would not be so did they not occupy a field that the newspapers cannot reach.—*Northwestern Lumberman.*

NEWS.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., recently received the following orders for their celebrated Gray's noiseless belt roller mills, and report a fairly good trade, notwithstanding the dull times in milling circles at present.

J. & P. B. Yates, Berlin, Wis., a Gray's noiseless belt roller mill.

E. Smith, Burlington, Kansas, a Gray's noiseless belt roller mill.

Proctor Taylor, Pontiac, Ill., another Gray's noiseless belt roller mill.

Wood-Maude Milling Co., St. Louis, a Gray's noiseless belt roller mill.

J. H. Bartles, Bartlesville, Ind., Ter., a Gray's noiseless belt roller mill.

W. H. C. Kemp, Williamsport, Ind., a Gray's noiseless belt roller mill.

Stratton, Merrill & Co., Concord, N. H., a Gray's noiseless belt roller mill.

Washburn Mill Co., Anoka, Minn., another Gray's noiseless belt roller mill.

C. A. Pillsbury & Co., Minneapolis, another Gray's noiseless belt roller mill.

S. H. Watson, Vinton, Iowa, four pair Allis rolls in Gray's noiseless belt frames.

E. Foster, Plymouth, Iowa, six pair Allis rolls in Gray's noiseless belt frames.

Siddle, Fletcher & Holmes, Minneapolis, another Gray's noiseless belt roller mill.

J. H. Rodgers, Lewiston, Pa., six pair of Allis rolls in Gray's noiseless belt frames.

Wm. Listeman, La Crosse, Wis., eight pair Allis rolls in Gray's noiseless belt frames.

C. A. Gambrill M'fg Co., Baltimore, Md., four pair of Allis rolls in Gray's noiseless belt frames.

Pollack, Bellamy & Co., Slater, Mo., four more pair of Allis rolls in Gray's noiseless belt frames.

Wilton Mill & Elevator Co., Milton Junct., Iowa, six pair of Allis rolls in Gray's noiseless belt frames.

Sam Kaucher, St. Joseph, Mo., has ordered a Gray's noiseless belt roller mill, for one of his customers.

Henry Mueller, Howard Grove, Wis., a Wegman's porcelain roller mill in Gray's noiseless belt frames.

Wolf & Hamaker, Allentown, Pa., recently ordered a Gray's noiseless belt roller mill for one of their customers

Hook Bros & Ascon, Zanesville, O., are putting in three pair of Allis rolls, in Gray's noiseless belt frames.

Richmond City Mill Works, of Richmond, Ind., have placed orders for a Gray's noiseless belt roller mill for Blair and Ault, Atchison, Kan.

Waggoner & Gates' Mill Co., Independence, Mo., four pair Allis rolls in Gray's noiseless belt frames, and four pair Wegmann's porcelain rolls in Gray's noiseless belt frames.

Edw. P. Allis & Co., have taken the contract for remodeling G. W. Browning & Co's., mill at Worthington, Ind., and will put in seven pair of Allis rolls in Gray's noiseless belt frames.

F. J. & J. W. Schupp, Concordia, Mo., have recently placed an order with E. P. Allis & Co., Milwaukee, for six pair Allis rolls, in Gray's noiseless belt frames, for a job they have in Mo.

The Great Western M'fg Co., of Leavenworth, Kan., recently put in a Gray's noiseless belt roller mill, for J. M. Graham, St. Joseph, Mo. Have order in for another for one of their customers.

Montgomery & Carnahan, York, Neb., have contracted with Edw. P. Allis & Co., to change their mill to the roller system and will use ten pair of Allis rolls in Gray's noiseless belt frames.

Mr. A. Yocum's mill, at Reading, Pa., is being remodeled on the roller system. Wolf & Hamaker of Allentown, are doing the work and are using eight pair of Allis rolls, in Gray's noiseless belt frames.

Wilson, Weddle Jr., of West Newcon, Pa., has just placed contract with Edw. P. Allis & Co., for five double sets Gray's noiseless belt roller mills, cleaning machinery, etc., necessary to change his mill to the roller system.

Alexander, Kelley & Southerland, Brandon, Manitoba, have contracted with Edw. P. Allis & Co., of Milwaukee, Wis., to remodel their mill to the roller system and will use eight pair of Allis rolls in Gray's noiseless belt frames. The mill is now undergoing the process of remodeling.

Willford & Northway, Minneapolis, Minn., have lately placed orders for four pair of Allis rolls in Gray's noiseless belt frames, for M. Simnier, New Prague, Minn., two porcelain roller mills for C. & F. G. Gove, Madelia, Minn., and a Gray's noiseless belt roller mill, for John Mack, Red wing, Minn.

J. T. Graham, Rockford, Iowa, is putting in rolls furnished by the Case Mf'g Co., Columbus, Ohio.

James Rogers, Litchfield, Ill., has lately started up his mill on the "Case" gradual reduction system.

Hayden & Son, Elizabeth, Pa., have lately started up their mill on the "Case" gradual reduction system.

E. F. Shatzer & Co., Evansville, Ind., has ordered two No. 1 double purifiers, from the Case Mf'g Co., Columbus, Ohio.

The Case Mfg. Co., Columbus, Ohio, have an order from Harvey & Griffin, Greenwich, Ohio, for one No. 1 double purifier.

The Case Mfg. Co., Columbus, Ohio, have an order from F. M. Drake, Waldo, Ohio, for one of their patent automatic feeds, for his "Odell" rolls.

The Case Mfg. Co., Columbus, Ohio, have lately shipped McDuffin & Bros., Michigan City, Ind., two pairs of rolls with patent automatic feed.

The Case Mf'g Co., Columbus, Ohio, have lately shipped E. Phelps, Granville, Ohio, one of their patent automatic feeds for his "Ohio" purifier.

The Case Mf'g Co., Columbus, Ohio, have an additional order from Northrup Bros., Wyandotte, Kan., for two pair rolls with patent automatic feed.

The Case Mf'g Co., Columbus, Ohio, have an order from J. Shontz & Son, Bloomville, Ohio, for four pair rolls (Bismark) with patent automatic feed.

The Case M'fg Co., Columbus, Ohio, have an additional order from Werner, Miller & Co., Wright City, Mo., for two pair rolls with patent automatic feed,

The Case Mfg. Co., Columbus, Ohio, have an order from Geo. Tileston & Co., Faribault, Minn., for one of their patent automatic feeds for their Allis rolls.

The Case Mf'g Co., Columbus, Ohio, have lately shipped the Birmingham Iron Foundry and Machine Co., Birmingham, Conn., one of their corrugating machines.

The Case Mf'g Co., Columbus, Ohio, have lately furnished Ducke & Co., Marietta, Ohio, with four pair rolls with patent automatic feed in Bismarck frames.

Geo. Tileston & Co., Fairbault, Minn., are putting in a "little giant" break and Scalper, making three separations, furnished by the Case Mf'g Co., Columbus, Ohio.

The Case Mf'g Co., Columbus, Ohio, have an order from Columbia & Gray, Guide Rock, Neb., for one "little giant" break machine and scalper, making three separations.

The Case Mf'g Co., Columbus, Ohio, have lately received an order from the Pray Mf'g Co., Minneapolis, Minn., for five pair of rolls with patent Automatic feed and one No. 1 double purifier.

The Case Mfg. Co., Columbus, Ohio, have lately shipped John McCarty, Meridosia, Ill., a line "Bismarck" rolls and break machines, all with patent automatic feed.

J. C. Bucher, Barnitz, Pa., lately remodeled his mill, putting in a complete outfit of rolls, etc., furnished by the Case Mfg. Co., Columbus, Ohio. The mill is now in operation with splendid results.

H. & D. Lucas, Jewett, Ohio, have lately remodeled their mill to the "Case" roller system, and have been threatened with a law suit by one of their customers who says his wife baked a loaf of bread out of their flour and had to take the top off the stove to get the loaf out.

The Case Mfg. Co., Columbus, Ohio, have lately been awarded the contract of G. K. Leigler, Bucyrus, Ohio, for a complete outfit for a full gradual reduction mill on the Case system, using ten pairs of rolls with automatic feed in connection with their breaks, scalpers, centrifugals, purifiers, etc. The mill, when completed, will have a daily capacity of 110 barrels.

From the tone of the Mill Furnishers' correspondence generally, we infer that a good trade is looked for when the winter breaks up. The Case Manufacturing Co., of Columbus, O., write us that they are, even now, having a good trade with prospects for a better one in the near future. They state they have lately taken orders for full roller mills on their system in the following States: Ohio, Pennsylvania, Maryland, Iowa, Illinois, Indiana and Missouri. It is the smaller millers who are now chiefly anxious to have their mills changed over.

Stout, Mills & Temple, Dayton, O., report a brisk business, and we give below a part of the many orders received by them:

At Waupaca, Wis., a fire broke out on the night of Jan. 27, in the flouring mill of Baldwin & Oborn, and in two hours the building and stock were entirely consumed. Loss on building and machinery $15,000, with an insurance of $3,000 in the Chicago Millers' Mutual. The large flouring mill owned by Lord Bros. and the tannery of Christian Johnson, near by, were saved by the heroic efforts of the firemen and citizens. The fire engine was disabled during the progress of the fire, but not until most of the danger was past. Baldwin & Oborn's mill was built in 1871, and was remodeled into a roller mill two years ago. The damage to Lord Bros'. mill will be $100, which is fully covered by a policy in the insurance company of North America.

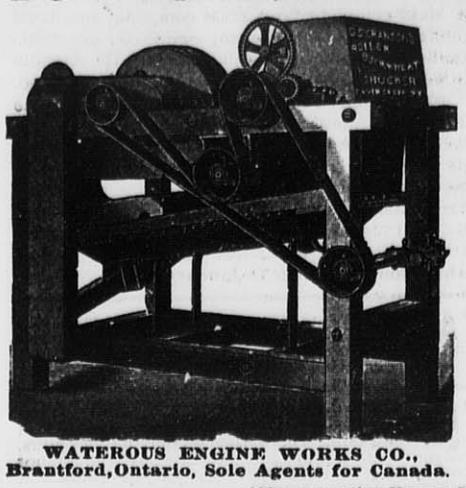
Two contracts for complete mills in Nebraska. One for Martin & Smith, Albion, Neb., for 125-bbls. capacity, using a six-break Gilbert combination mill, and Livingstone finishing rolls,—together with all machines and machinery necessary to make a complete mill, according to plans and Livingston system, by the above firm; The other from Crouch Bros., Albion, Neb., for a 75-bbls. mill complete according to plans and Livingston system, furnished by them. These mills will all use the four-break Gilbert mill and Livingston finishing rolls. They have also received orders for rolls from James Skinner, Aurora, Ill.; Hardesty Bros., Columbus, Ohio; and Crosby Roller Milling Co. of Topeka, Kansas. They are also remodeling the mill of E. P. Rhodes & Co., Bridgeport, O.—bringing it up to 150-bbls. capacity; and have complete crews of millwrights at work at House, Palmer & Co.'s mills, Rockland, O., and Parson Bros. Auburn.

The above is one of many instances illustrating what advertising in the U. S. MILLER will do.

The following are some of the orders recently received by Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for the Celebrated Reynolds' Corliss Engine.

Whitely, Fraser & Kelly, Springfield, Ohio, a 20x48 complete with boiler, heater, pumps, etc., H. E. Brooks & Co., Isinours, Minn., a 16x32 complete with heater, etc. Leavenworth Oat Meal Mill Co., Leavenworth, Kan., a 16x42 complete with boiler, heater, etc. Southern Kansas R. R. Co., Topeka, Kan., a 12x36 complete with boiler, heater, etc. The Portage Straw Board Co., Akron, Ohio, a pair 23x60's complete, one 16x42 complete; one 12x36 complete; one 12x36 complete; one 12x36 complete; one 12x36; one 2,000,000 gallons pumping engine all complete. The Arcadia File Works, Sing Sing, N. Y., one 18x48 engine; also, the 30x60 compound condensing engine for the Pillsbury "A" mill, and the 26x48 engine for the Pillsbury "Anchor" mill, at Minneapolis, all complete with boilers, heaters, etc. Owing to the uncertainty of the water supply at Minneapolis, the millers are realizing the necessity of a more reliable power, and C. A. Pillsbury & Co., have made the break by putting in the above engines. The engines will be started about the middle of January.

DO YOU MAKE BUCKWHEAT FLOUR?



—BY USING—

CRANSON'S

SILVER CREEK ROLLER BUCKWHEAT

SHUCKER

—YOU CAN—

INCREASE YOUR PROFITS,
BETTER YOUR QUALITY,
SATISFY YOUR CUSTOMERS.

Send for full Descriptive Circular, giving prices, sizes, terms, etc.

G. S. CRANSON & SON'

Silver Creek, Chaut. Co., N. Y.

WATEROUS ENGINE WORKS CO., Brantford, Ontario, Sole Agents for Canada.

[Please mention UNITED STATES MILLER when writing].

BOTTLED BEER.

VOECHTING, SHAPE & CO.,

SOLE BOTTLERS FOR

JOSEPH SCHLITZ BREWING COMPANY'S

CELEBRATED MILWAUKEE LAGER BEER.

Cor. Second and Galena Streets,

MILWAUKEE, - - - WISCONSIN.

BOTTLERS' SUPPLIES CONSTANTLY ON HAND.

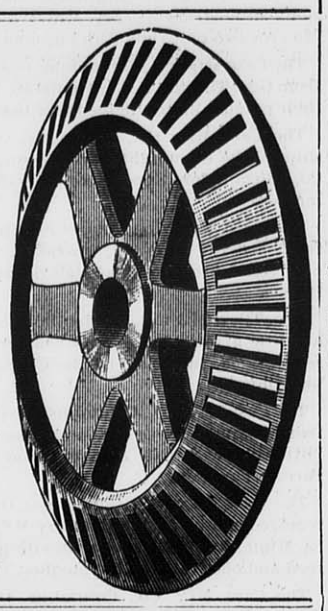
[Please mention this paper when you write to us.]

ELEVATORS

For Mills. } Cohoes Iron Foundry & Machine Co.

Send for Catalogue. COHOES, N. Y.

Power Transmitting MACHINERY.



Shafting, + Hangers,

PULLEYS.

COUPLINGS AND GEARS A SPECIALTY.

THE PAIGE MFG. CO.,

PAINESVILLE, OHIO.

GOVERNORS

For Water Wheels } Cohoes Iron Foundry and Mch. Co.

Send for Catalogue. Cohoes, N. Y.

5300

'Triumph' Power Corn Shellers

IN USE.

Send for Descriptive circular and Testimonials.

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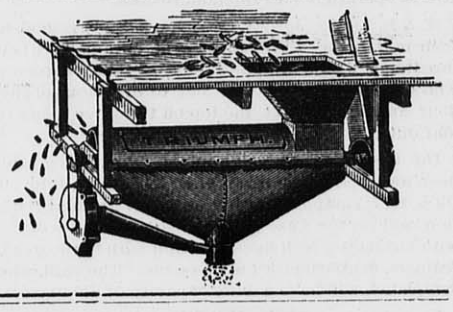
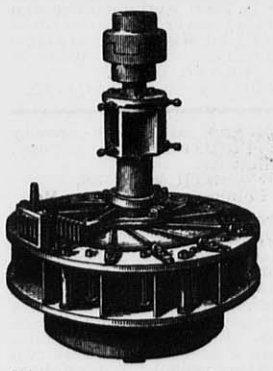
PAIGE MANUFACTURING CO.,

20, 22 and 24 St. Clair St., Painesville, O.





JAMES LEFFEL'S IMPROVED

WATER WHEEL,

Fine New Pamphlet for 1883.

The "OLD RELIABLE" with Improvements, making it the **Most Perfect Turbine now in use**, comprising the **Largest** and the **Smallest** Wheels, under both the **Highest** and **Lowest** Heads in this country. Our new Pocket Wheel Book sent free. Address,

JAMES LEFFEL & CO., Springfield, Ohio.

and 110 Liberty St., New York City

[Please mention this paper when you write to us.]

RICHMOND MANUFACTURING CO.,

LOCKPORT, N. Y.,

MANUFACTURERS OF RICHMOND'S CELEBRATED

Warehouse Receiving Separator, Grain Separator

AND OAT EXTRACTOR,

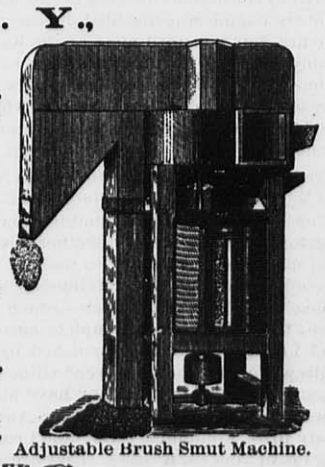
WHEAT SCOURERS,

—AND—

Wheat Brush Machines,

UPRIGHT AND HORIZONTAL BRAN DUSTERS,

CENTRIFUGAL FLOUR DRESSING MACHINES.



Adjustable Brush Smut Machine.

Thousands of these Machines are in successful operation, both in this country and in Europe. Correspondence solicited.

SEND FOR DESCRIPTIVE CATALOGUE.

[Please mention this paper when you write.]

STEEL CASTINGS

FROM 1-4 to 10,000 LBS. WEIGHT.

True to pattern, sound and solid, of unequaled strength, toughness and durability.
An invaluable substitute for forgiegs or cast iron requiring three-fold strength.
Gearing of all kinds, Shoes, Dies, Hammer-Heads, Cross-Heads, for Locomotives, etc.
15,000 Crank Shafts, and 10,000 Gear Wheels of this kind now running, prove its superiority over all other steel castings.
Crank Shafts, Cross-Heads, and Gearing, specialties.
Circulars and Price Lists free. Address,

CHESTER STEEL CASTINGS CO.,

Works, CHESTER, PA. 407 LIBERTY ST., PHILADELPHIA, U. S. A.

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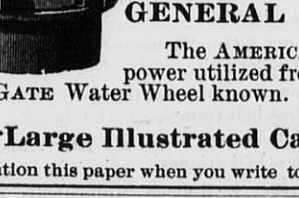
Send for Catalogue and Prices.



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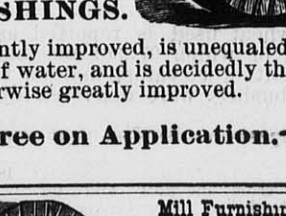
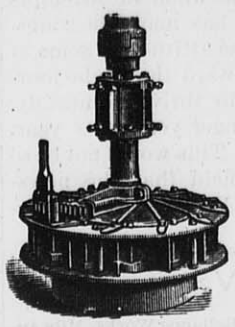
INDIANAPOLIS, IND., U. S. A.

MANUFACTURERS OF

STEAM ENGINES AND BOILERS.



CARRY ENGINES and BOILERS IN STOCK for IMMEDIATE DELIVERY



POOLE & HUNT'S

Leffel Turbine Water Wheel

Made of best material and in best style of workmanship.

Machine Molded Mill Gearing

From 1 to 20 feet diameter, of any desired face or pitch, molded by our own SPECIAL MACHINERY. **Shafting, Pulleys, and Hangers,** of the latest and most improved designs.

Mixers and General Outfit for Fertilizer Works.

Shipping Facilities the Best in all Directions.

POOLE & HUNT, Baltimore, Md

N. B.—Special attention given to Heavy Gearing for Pulp and Paper Mills.

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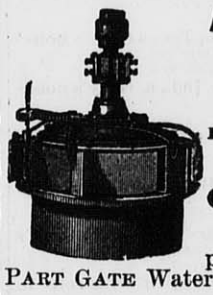
Stout, Mills & Temple,

DAYTON, - - - OHIO.

MANUFACTURERS OF THE



American Turbine Water Wheel,

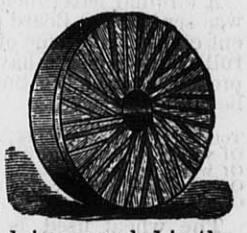
Best Quality French BUHR MILLSTONES.

Sole Agents in Dayton for the sale of

DU FOUR & CO'S CELEBRATED BOLTING CLOTHS.

Flour and Paper Mill Machinery, Best Chilled or Porcelain Rolls for Crushing Wheat and Middlings and

GENERAL MILL FURNISHINGS.



The AMERICAN TURBINE, as recently improved, is unequaled in the power utilized from a given quantity of water, and is decidedly the BEST PART GATE Water Wheel known. It has also been otherwise greatly improved.

Large Illustrated Catalogue Sent Free on Application.

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The E. T. Barnum Wire & Iron Works,

MANUFACTURERS OF

IRON, STEEL, COPPER, BRASS

WIRE CLOTH

For Paper and Flouring Mills, Breweries and Mining. **STEEL TEMPERED WIRE CLOTH,** for **BOLTING PURPOSES,** Wire Office and Counter Railing, Wrought Iron Fences, Wire Signs, Stable Fixtures, Weather Vanes, Roof Cresting, &c.

WIRE AND IRON WORK OF EVERY DESCRIPTION.

Write for Catalogue, stating your wants, and we will make you estimate. Mention this paper.

MANUFACTURED BY The E. T. Barnum Wire & Iron Works, Detroit, Mich.

Mill Furnishing, Foundrymen & Machinists.

Established 1851.

MANUFACTURE

MILL STONES.

Flouring Mill Contractors.

Send for Pamphlet.

Nordyke & Marmon Co

Indianapolis, Ind.

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Milwaukee & Northern Railroad.

THE OLD RELIABLE ROUTE.

17 Miles the Shortest Line

—TO—

GREEN BAY,

Oconto, Fort Howard, Depere, Menasha, Neenah, and Appleton

—THE NEW ROUTE TO—

New London, Grand Rapids, Chippewa Falls, Eau Claire, and all points in

CENTRAL AND NORTHERN WISCONSIN.

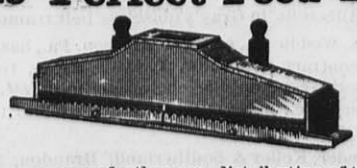
The new line to Oconto is now completed, and opens to the public the shortest and best route to all points on the Michigan Peninsula.

CONNECTIONS,

AT PLYMOUTH with the Sheboygan and Fond du Lac Division Chicago & North-Western R'y for Sheboygan and Fond du Lac.
AT FOREST JUNCTION with Milwaukee, Lake Shore and Western Railway.
AT GREEN BAY with Chicago & North Western and Green Bay, Winona & St. Paul Railroads, for all points North and West.

C. F. DUTTON, Gen'l Sup't. **F. P. REGAN,** Gen'l Ticket Agent.

The Perfect Feed Box



It insures a perfectly even distribution of the middlings over the entire width of the cloth. Every miller will appreciate this. Fits all purifiers. Address,

CASE MANUFACTURING CO.,

COLUMBUS, OHIO.

W. E. CATLIN & CO., 68 LAKE ST., CHICAGO, ILL. AGENTS.

[Please mention this paper when you write to us,]

GANZ & CO.,

Budapest, Austria-Hungary.

We are the first introducers of the Chilled Iron Rollers for milling purposes, and hold Letters patent for the United States of America. For full particulars address as above.

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CHOICE BEVELED EDGE

FLOUR BRANDS

For two dollars and upwards. Also RUBBER STAMPS, BURNING BRANDS, SEALS, STEEL NAME STAMPS, LETTERS AND FIGURES, ETC. Orders promptly attended to. **CHAS H. CLARKE,**

Box 114 82 Wisconsin St., Milwaukee.

WISCONSIN CENTRAL LINE

3 TRAINS EACH WAY DAILY

—BETWEEN—

MILWAUKEE, FOND DU LAC, OSHKOSH, NEENAH and MENASHA.

—WITH—

PARLOR CARS

through from Chicago via Milwaukee without change on Day Trains.

New & Elegant Sleepers

from Chicago to Stevens Point on Train leaving Chicago via C., M. & St. P. R'y Co., at 9 P. M.

Also a Superb Sleeper from Milwaukee to Neenah attached to the same train, leaving Milwaukee at midnight. N. B.—This Sleeper will be ready for passengers at Reed St. Depot, Milwaukee, at 9 o'clock P. M.

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MILWAUKEE and EAU CLAIRE.

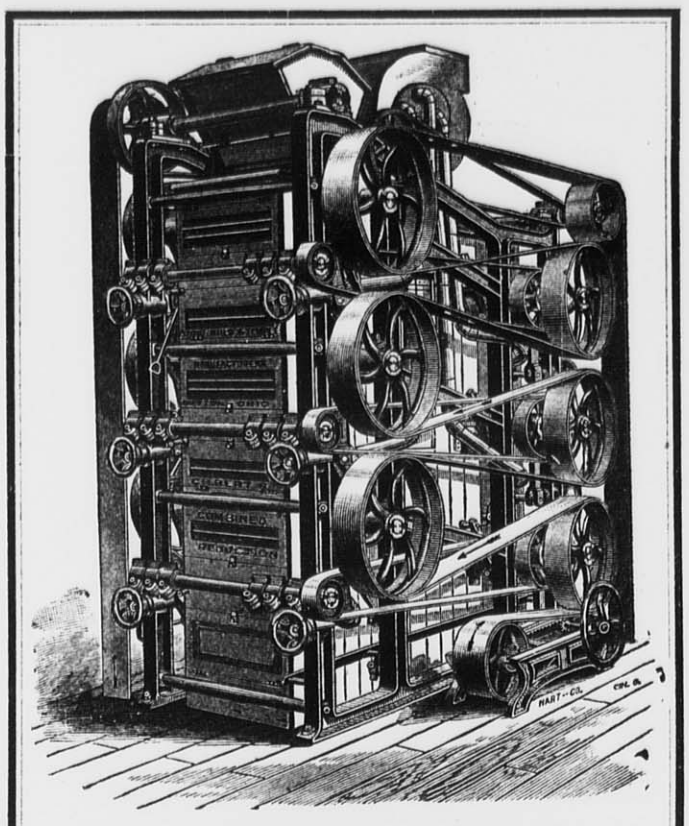
1 A DAILY TRAIN TO Ashland, Lake Superior.

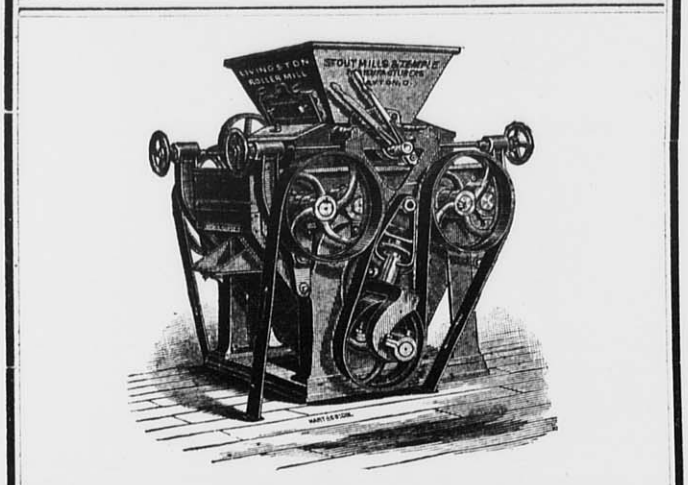
NO CHANGE OF CARS

From Milwaukee to Stevens Point, Chippewa Falls, Eau Claire or Ashland, Lake Superior.

These superior facilities make this the **BEST ROUTE** for **GRAND RAPIDS, WAUSAU, MERRILL and points in CENTRAL WISCONSIN.**

F. N. FINNEY, Gen'l Manager, Milwaukee. **JAS. BARKER,** Gen'l Pass. Agent, Mil.





THE CHAMPIONS!

The Gilbert Combination Reduction

ROLLER MILL

Acknowledged by ALL USERS and DISINTERESTED JUDGES to be

THE BEST COMBINATION MILL IN THE WORLD:

It is used in a Gradual Reduction Mill to make the breaks, and to do the scalping between same, and aspirates the stock after EACH separation. The products from the Mill are Bran for the Duster, and Middlings for the Purifier.

The Livingston Belted Roller Mill,

The strongest, simplest, yet most completely adjusted Four Roller Mill in the market. It can be used for reducing all kinds of grain.

For descriptive circular and price list, call on or address,

STOUT, MILLS & TEMPLE, SOLE MANUFACTURERS, DAYTON, OHIO.

CHAS. RAKES, Lockport, N. Y., Sole Agent for New York, Pennsylvania, Virginia, W. Virginia, Maryland, New Jersey and New England States.

[Please mention the UNITED STATES MILLER when you write to us.]

THE MARTIN

Improved Centrifugal Flour Dressing Reel!

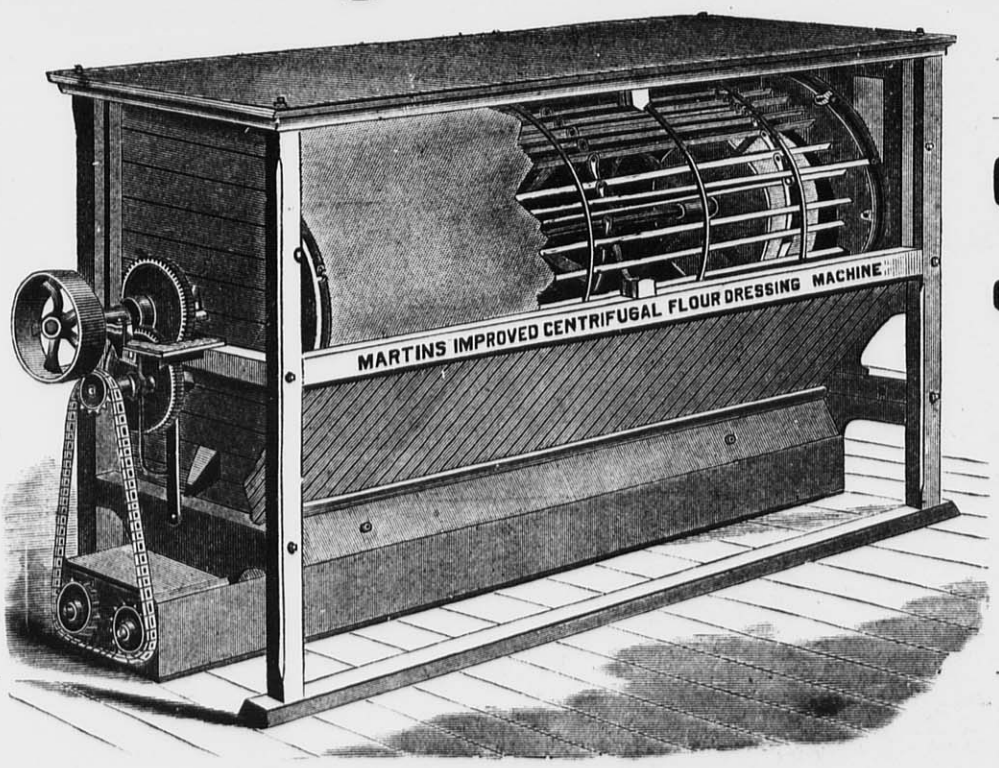
Over 1,000 in Use!

Largest Capacity,

Best Results,

Lightest Running,

Least Wear of Silk.



Over 1,000 in Use!

Our New Double Conveyors,

New Cloth Fixing and Stretching Device,

New and Improved Manner of Driving,

Are Special Features of the Greatest Importance.

THE MARTIN CENTRIFUGAL has more than FOUR TIMES the capacity of the ordinary reel, and will make clear flour and a clean finish on stock that cannot be treated in the common reel without loss, no matter how much silk it is passed over.

IT IS ESPECIALLY ADAPTED to handling soft, re-ground material, full of light impurities, whether from rolls or stone.

IT IS VASTLY SUPERIOR to the common reel for dusting middlings.

IT IS INDISPENSABLE to a CLOSE FINISH in any system of gradual reduction milling, and will improve the quality of the low grade flour, at the same time it makes the offal cleaner.

IT MAKES A CLEAN SEPARATION on caked and flaky meal from smooth rolls, which no other style of reel can do.

THEY CAN BE USED TO ADVANTAGE as a complete system of bolting, to the exclusion of the ordinary reel.

Since commencing the manufacture of these reels we have sold them in large numbers to leading millers in all parts of the country, for work in connection with all kinds of reduction machines and on every class of material, and they are giving unqualified satisfaction. We build them in six sizes, suitable for all classes of mills, and ranging in capacity from ***200 to 2,000 pounds.*** Write for circulars, etc.

Geo. T. Smith Middlings Purifier Co., Jackson, Mich.

[Please mention this paper when you write to us.]